PUBLICATIONS OF THE SCOTTISH COUNCIL FOR RESEARCH IN EDUCATION

IX

INTERNATIONAL EXAMINATION INQUIRY

THE PROGNOSTIC VALUE OF UNIVERSITY ENTRANCE EXAMINATIONS IN SCOTLAND

THE PROGNOSTIC VALUE OF UNIVERSITY ENTRANCE EXAMINATIONS IN SCOTLAND

NEW IMPRESSION

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PREFATORY NOTE

THE following Report embodies the results of one part of an inquiry into the prognostic value of examinations initiated by the International Institute of Teachers College, Columbia University. It deals with two Scottish examinations, the Preliminary Examination of the Scottish Universities Entrance Board and its principal equivalent, the Leaving Certificate Examination of the Scottish Education Department in relation to success in the Faculties of Arts, Pure Science, and Medicine at the University. The Committee responsible for the Report desire to record their obligations to the International Institute of Teachers College, under whose auspices their inquiries were carried out; to the University authorities who permitted the use of data relating to their students, to the University officials who extracted the data, and to the Professors and Lecturers who furnished class marks; to the members and officials of the Entrance Board for information about the Preliminary Examination; and to the Scottish Education Department for Teachers' Estimates and Leaving Certificate marks. The expense of the investigation has been borne by the International Institute of Teachers College, Columbia University, New York.

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PART I

ARTS AND PURE SCIENCE

GENERAL DEDUCTIONS

I

INTRODUCTORY

In May 1931 the International Institute of Teachers College, Columbia University, with the concurrence and support of the Carnegie Corporation of New York, convened an International Conference at Eastbourne to discuss the place of examinations in modern education and their effect on the structure of modern societies. England was represented at the Conference by Dr P. B. Ballard, Professor Delisle Burns, Professor Cyril Burt, Sir Philip Hartog, Sir Percy Nunn, Sir Michael Sadler, Professor C. E. Spearman, and Dr Graham Wallas; France by M. Barrier, M. Bouglé, M. Cope, M. Declos, and M. Ch. Maurain; Germany by Professor Carl Becker, Dr Otto Bobertag, Professor Erich Hylla, and Dr Robert Ulich; Scotland by Mr W. A. F. Hepburn, Dr Robert R. Rusk, Dr J. C. Smith, and Professor Godfrey H. Thomson (Mr Thomas Henderson, Honorary Secretary to The Scottish Council for Research in Education, was invited to the Conference, but was unable to be present); Switzerland by M. Pierre Bovet; and the United States of America by Dr C. H. Judd, Dr Frederick P. Keppel, Dr Paul Monroe, Dr Henry Suzzallo, and Dr Edward L. Thorndike.[1] A full Report of the proceedings of the Eastbourne Conference has been published by the International Institute of Teachers College under the title of *Conference on Examinations*.[2]

[1] On the English Committee Professor Godfrey Thomson has taken the place rendered vacant by the death of Dr Graham Wallas; Professor H. R Hamley and Professor C. W. Valentine have been added MM. Gastinel, Laugier, Luc, and R d'Argila (Secretary) have been added to the French Committee in place of M Cope, deceased, and M Maurain. Of the German Committee only Professor Hylla is left; Professor Becker and Dr Bobertag have died, and Dr Ulich is now in America. The Swiss Committee consists of M. Pierre Bovet, Dr W. Brenner, M. Edouard Claparède, M Robert Dottrens, Dr Charles Junod, M. Albert Malche, M Jean Piaget, Dr W Schohaus, Dr Ida Somazzi, Dr Hans Stettbacher, and M. Teodoro Valentini

[2] Bureau of Publications, Teachers College, Columbia University, New York City.

Before the Conference dispersed it was agreed that the representatives of each country should undertake certain specific inquiries into their national systems of examination with the object always of elucidating their social effects. The Scottish delegation on its return home was strengthened by the addition of Dr William Boyd, Dr Shepherd Dawson,[1] Professor Drever, Mr D Kennedy-Fraser, Professor M'Clelland, and Dr John Mackie, and was constituted as the International Examination Inquiry Committee of The Scottish Council for Research in Education. Besides engaging to co-operate generally with the International Institute in its investigation of examinations, the Committee undertook as its immediate contribution (1) to assist in the completion of two minor inquiries already undertaken by The Scottish Council for Research in Education, and (2) to initiate an inquiry into the methods at present employed in Scotland for the selection of pupils for higher education at Secondary Schools and Universities.

The two "minor inquiries" concerned teachers' estimates and the time devoted to examinations. These were completed in the course of session 1931–32; the results were embodied in Research Council Supplement No. 7, and issued with *The Scottish Educational Journal* on 13th May 1932.

The major inquiry branched out at once into two distinct investigations, the one prospective, the other retrospective. The prospective inquiry was suggested by the fact that just before the Eastbourne Conference the Research Council had decided to undertake a mental survey of Scottish school children on an extensive scale. A year was occupied in preparations; then, in the first week of June 1932, a complete age-group of 87,498 children, comprising with negligible exceptions all the children in Scottish schools born in 1921, was tested by means of a Group Intelligence Test In addition, 1000 of these 87,498 children, so taken as to give a representative sample of the whole age-group, were tested individually by means of the Terman revision of the Binet-Simon scale. The individual tests were completed in October 1932, and the results of the whole inquiry were published in 1933 under the title *The Intelligence of Scottish Children: A National Survey of an Age Group.*[2]

[1] Dr Dawson succeeded Professor Thomson as Convener in February 1934 and died on 26th March 1935 Professor Drever was then appointed Convener

[2] University of London Press, Ltd.

All the material collected in this inquiry being accessible in the offices of the Research Council, the Examination Inquiry Committee resolved to keep in touch with the thousand children who had been tested individually, and to follow them up at least to the end of their school courses and where possible into their after-school careers, in the hope of ascertaining how far the promise shown at the age of eleven was fulfilled by subsequent performance. Thanks to the assistance readily given by teachers and education officers, this follow-up is now proceeding systematically, though it will naturally be some years before it yields results of general significance.

The retrospective inquiry promised speedier returns. The Committee therefore decided to confine the investigation to a definite and manageable group of University students, those, namely, who had entered on degree courses in Arts and Pure Science at one of the Scottish Universities in the autumn of 1928, and who ought therefore in most cases to have completed their degrees by the summer of 1932. Entrants in the Faculty of Medicine were later included. The object of the retrospective as of the prospective inquiry was simply to elucidate the predictive value of examinations, in this case of the examinations on the strength of which these students had been admitted to graduation courses The following statement shows the number[1] of cases in Arts and Pure Science investigated in different categories:—

	Men	Women	Men and Women
Hons M A., graduated .	49	36	85
Ord. „ „ .	72	136	208
Hons M A , not yet graduated	8	4	12
Ord. „ „ „ .	70	57	127
Hons. B.Sc , graduated .	14	3	17
Ord. „ „ .	2	2	4
B.Sc., not vet graduated .	14	3	17
LL.B., „ „ . .	2	..	2
Totals .	231	241	472

The procedure adopted was as follows: .Cards were prepared, one for each student, blue for men and cream for women. Details

[1] The numbers in Medicine will be found on p. 121

of a student's entrance qualification were entered on the front of his card, details of his University career on the back. (Specimen cards are appended to this Report, interleaved between pp. 188 and 189.) On the original cards these data were entered by the bodies which supplied them, *i.e.* by the University, the Entrance Board, and the Scottish Education Department. But to prevent identification, copies were made of the cards, on which the students' names were omitted and were replaced by running numbers. It was on these copies, and not on the original cards, that the Committee's computers worked. The data thus obtained were assembled, tabulated, and analysed. The results up to June 1933 for Arts and Science students and up to December 1934 for medical students are presented in this Report, together with such conclusions as the Committee have drawn.

II

CONDITIONS OF ENTRANCE TO SCOTTISH UNIVERSITIES

To readers unfamiliar with the Scottish system this Report will scarcely be intelligible without some explanation of the conditions on which students are admitted to the Scottish Universities.

The Scottish Universities are autonomous, but for purposes of admission they act through a joint board, called the Scottish Universities Entrance Board. Anyone can attend a University class in Scotland on payment of fees; but no one can be admitted to a graduation course, *i.e.* a course leading to a degree, unless he has obtained an attestation of fitness from the Universities Entrance Board, which attestation persons under 21 can obtain, as a rule, only by passing a written test. For this purpose the Entrance Board hold an examination of their own, known as the University Preliminary Examination. But they also accept passes at certain other examinations in lieu of passes at their own "Prelim." Thus a student from England may be admitted to a degree course in Scotland if he possesses qualifications that would admit him to such a course in England. But most of the University students in Scotland have, of course, been at school in Scotland. Hence much the most important equivalent for the University Preliminary Examination is that which is provided by the examination for the Leaving Certificate of the Scottish Education Department.

Not that the Entrance Board accept the Leaving Certificate *as such* in lieu of their own examination. What they accept are passes in separate subjects obtained at the written examination for the Leaving Certificate. (The number and nature of these subjects are described on p. 23 of this Report.) The Leaving Certificate as such is a group certificate, testifying to the successful completion of an approved Secondary course. Not every Leaving Certificate entitles its holder to enter on a University graduating course: he may not have been presented in all the subjects required for

University entrance, or he may have failed in some of them. In the extreme case a candidate debarred from the written examination by illness may nevertheless, on good cause being shown, be awarded a Leaving Certificate; but such a Leaving Certificate would not as a rule count for University entrance. It may be added that the Leaving Certificate is accepted for entrance by many other bodies besides the Scottish Universities Entrance Board, by some without conditions, by others with conditions as to passes in the written papers similar to those imposed by the Entrance Board. A full list of such bodies, 52 in all, will be found on pp. 113 to 115 of the Scottish Education Department's Leaving Certificate Examination Papers, 1934.

The Scottish Leaving Certificate differs from English School Certificates in several respects. (1) In England there are two School Certificates, the First and the Second; in Scotland there is only one. (2) The English First School Certificate may be obtained after four years of Secondary education; the Leaving Certificate requires at least five. (3) English School Certificates are awarded by bodies representing Universities; the Leaving Certificate is awarded by the Scottish Education Department. No doubt the Department may employ University teachers to assist in the work, but the whole responsibility rests with the Department, by whom also the whole cost is borne. Finally, the Leaving Certificate examination differs from other examinations of the kind in the weight which is given to teachers' estimates. When a school submits its list of candidates, the principal teacher in each subject gives a percentage mark to every candidate in that subject, and the Head Teacher gives a letter mark for every candidate's general attainments. When the written tests have been worked by the candidates and marked by the revisers, and the marks standardised by the Chief Examiners, the revisers' marks are entered in columns parallel to the teachers' estimates, and the forms then go to the visiting inspectors. A visiting inspector's business is twofold: (1) to examine those aspects of his subject which do not lend themselves to written tests, *e.g.* oral proficiency in languages, experimental laboratory work in science; (2) to iron out any discrepancy that has emerged between the teacher's estimate and the reviser's mark, and to decide which of them more nearly represents the candidate's true form. The marks in all subjects are then assembled, and each candidate's claim is assessed on his whole performance, doubtful cases being

referred to a Chief Inspector. The whole procedure aims at retaining the objectivity of a written examination, while reducing the element of chance to which all written examinations are liable. It should be added that in all subjects except English there are two grades, higher and lower; and that every candidate must be presented in English and at least three other subjects, of which one at least must be on the higher grade.[1]

The University Preliminary Examination is an external examination conducted by written tests. In Latin, Greek, and Mathematics (but in no other subject) there are two standards, the lower being somewhat below the lower grade of the Leaving Certificate Examination in these subjects. Moreover, there is some prescribed work in languages, whereas the Leaving Certificate tests are all unseen. But the standard of the two examinations is intended to be the same. If, nevertheless, teachers have till recently regarded the Preliminary Examination as the easier of the two, the reason lies partly in the differences just mentioned, but mainly in the fact that the Preliminary Examination can be passed at two sittings, while the Leaving Certificate, till recently, had to be passed at one sitting. Since 1932, however, the Department have permitted a candidate to be presented in his fourth or a later year in one subject on the lower grade; if he passes, his pass is credited to him. In another respect also there has recently been approximation. Until 1932 the Entrance Board held two Preliminary Examinations each year, one in spring and one in autumn, the spring examination being held about a fortnight before the Leaving Certificate. The spring examination and the Leaving Certificate Examination are now held simultaneously, and the same papers are used in both in all subjects which are common to them.[2]

The following table shows the part that the Leaving Certificate plays in Scottish education, and its importance as a means of admission to the Scottish Universities.

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[1] Throughout this investigation the pass mark for the Leaving Certificate was taken to be 50 per cent. In the University which supplied the data for this investigation the pass mark for the Ordinary Degree and Second Course is 50 per cent., but the pass mark for a Cognate subject is 60 per cent.

[2] No passage for dictation, however, is given in Modern Languages in the Preliminary Examination.

In Physical Science the Scottish Universities Entrance Board does not accept the combination Physics and Chemistry. Candidates in Physical Science must take Dynamics and Physics, or Dynamics and Chemistry.

TABLE I

*Population of Scotland in 1928	4,848,000
Total School Population in 1928	825,867
*Population of age 18–19 at 1928	approx. 90,000
Number of Pupils in Secondary Schools in 1928 (ages 11–18 and over)	81,122
Number of Pupils awarded Leaving Certificate in 1928	2,900
Number admitted to Scottish Universities in 1928	2,844
Number admitted to Scottish Universities in 1928 solely on Leaving Certificate	1,593 (56%)
Number admitted to Scottish Universities in 1928 partly by passes in Preliminary Examination and partly by Leaving Certificate passes	256 (9%)

* Estimate supplied by the Registrar-General.

III

COMPARATIVE STATEMENT OF DIFFERENT ENTRANCE QUALIFICATIONS AND UNIVERSITY COURSES IN ARTS AND PURE SCIENCE

THE following table shows the different entrance qualifications of the 472 students in Arts and Pure Science whose cases were investigated, the number of students who entered with each of these qualifications, and the number of those in each category who had by Easter 1933 graduated with Honours, or without Honours, or had not graduated.

TABLE II

	Entered with	M A Hons	M A Ord	M A, Incomplete	B Sc Hons	B Sc Ord	B Sc, Incomplete	LL B, Incomplete	Total
1.	Leaving Certificate	59	122	54	14	3	13	1	266
2	Leaving Certificate and Preliminary Examination	10	41	28		1	2	1	83
3	Preliminary Examination	7	26	32	2		1		68
4	Leaving Certificate and English Certificate			1					1
5	English or Welsh Certificate	7	14	10	1		1		33
6	Preliminary Examination and English Certificate		2	3					5
7	Preliminary Examination and Foreign Certificate		2	1					3
8.	Foreign Certificate	2		6					8
9	Other Qualifications		1	4					5
								Total	472

The previous section will have made it clear that either complete or partial exemption from the Preliminary Examination may be secured by passes obtained at other examinations.[1] Of the 472 students under consideration 56 per cent. obtained complete exemption and 18 per cent. obtained partial exemption through the Leaving Certificate; 7 per cent. obtained complete exemption through English or Welsh Certificates; and 14 per cent. entered by way of the Preliminary Examination alone. The importance of the Leaving Certificate as a means of admission is manifest.

TABLE III

Type of Entrance Certificate	Per centage Graduated with Honours	Per-centage with Ordinary Degree	Per-centage not yet Graduated (Easter 1933)	Total Fre-quency	Total Per-centage
Leaving Certificate	27	47	26	266	56
Leaving Certificate and Preliminary Examination	12	51	37	83	18
Preliminary Examination .	12	39	49	68	14
English or Welsh Certificate	24	43	33	33	7
Others .	9	23	68	22	5
			Totals	472	100

Table III presents some of the same facts as Table II in a different form. It shows for each category of entrance qualification the percentage of students in Arts and Pure Science who graduated with Honours, graduated without Honours, or had not graduated

[1] Partial exemption can no longer be secured by separate passes in examinations for English, Welsh, or Irish School Certificates.

at Easter 1933. (For the purpose of this table the categories numbered 4, 6, 7, 8, and 9 in Table II have been put together as "Others.")

It is clear from this table that, judged by the percentage that graduated within four years of first matriculation, students who entered by way of the Scottish Leaving Certificate alone are distinctly superior to those who entered by way of a combination of Leaving Certificate and Preliminary Examination, and still more distinctly superior to those who entered by the Preliminary Examination alone. The group of students entering with Leaving Certificate alone shows the highest percentage of Honours and the lowest percentage of incomplete degrees. Of those who entered by the Preliminary Examination alone almost half had failed to complete their degrees at Easter 1933. The group who entered with a combination of Leaving Certificate and Preliminary Examination take an intermediate position. This is to be expected, for most, though not all, of the students who take the Preliminary Examination are Scottish, and many of these take it in whole or in part because they have failed to obtain at the Leaving Certificate Examination all, or any of, the passes required by the Entrance Board, though it is taken also by a number of students who have not taken a full Secondary School Course, and are therefore ineligible for presentation at the Leaving Certificate Examination.

Table IV shows the University courses taken by pupils who failed in various subjects in the Leaving Certificate but passed them in the University Preliminary (or other) Examination.

There are 49 students in this table. Of these there were 30 who took in their degree course at the University the subject in which they had failed at the Leaving Certificate Examination. Of these 30 there were 24 who passed the Degree Examination either on the Cognate [1] or the Ordinary standard; so that only 20 per cent. of them failed. No students took Honours in a subject in which they had failed at the Leaving Certificate Examination.

[1] See footnote to Table IV.

TABLE IV

Showing subsequent University success in Arts and Pure Science of pupils failing in Leaving Certificate but passing in University Preliminary (or other) Examination.

Subject	Men or Women	Total	University Success				
			Honours [1]	Cognate [1]	Ordinary [1] Pass	Ordinary Fail	Did not take Subject at University
English .	M	1					1
	W	2					2
Mathematics	M	5		2			3
	W	13		5	3		5
French .	M	7			1	2	4
	W	11		4	3	2	2
German .	M	2				1	1
	W	1			1		
Science .	M	7			5	1	1
	W						
Totals .		49		11	13	6	19

Note.—In the subjects not given in the table the numbers were too small to be considered.

[1] For the benefit of the reader unfamiliar with the Scottish University system, it may be explained that for the "Ordinary" Degree in Arts the student must pass in 5 subjects on the Ordinary standard, and, in addition, must secure passes on a higher standard in 2 of these subjects, or in 2 subjects regarded as Cognate. The normal length of an Ordinary Degree Course in Arts is three years A student may elect to follow an "Honours" Course, which usually lasts for 4 years and involves 3 or 4 years' intensive study of a special subject. A student who fails to pass a subject in the Ordinary Degree may attempt it again at a later examination, but the final examination for Honours must be taken within 5 years of first matriculation and may be attempted only once; and on this final examination students may be awarded Honours of the 1st, 2nd, or 3rd Class.

IV

PROGNOSTIC VALUE OF GENERAL ESTIMATES AT SCHOOL-LEAVING AGE

It must be emphasised at the outset that the object of this inquiry was to estimate the *prognostic* or *predictive value* of the qualifications on the strength of which a student enters the University, *i.e.* the extent to which success in entrance examinations, or examinations accepted in lieu thereof, is an augury of success in University studies. The Committee took it for granted that the marks obtained by students at such examinations were a fair measure of their attainments at the time.

The predictive value of any estimate formed of a student before he enters the University can be gauged only by comparing it with his performance at the University. The data for such a comparison are, on the one hand, the Head Teacher's general estimate, the teachers' estimates in special subjects, the collective value of his Leaving Certificate, the number of passes it contains, and the revisers' marks in special subjects; on the other hand, the class of Honours he obtains if he takes Honours, or if he does not, the marks he obtains in degree and class examinations, the number of years he requires to obtain a degree, and the number of his failures in degree examinations.

It is easy to compare teachers' and revisers' marks in particular subjects with degree and class marks in those same subjects; but a general comparison is more difficult, since the most valuable datum on the University side, viz. the class of Honours, applies only to 18 per cent. of the students under consideration. Ordinary degrees are not "classed"; neither are Leaving Certificates; and while it is possible to evaluate Leaving Certificates with some approach to accuracy, the Committee have not found it possible to evaluate Ordinary degrees, in which a subject might have been passed at the first attempt or after repeated failures.

V

PROGNOSTIC VALUE OF HEAD TEACHER'S GENERAL ESTIMATE

It has been mentioned that when a Head Teacher submits his list of candidates for the Leaving Certificate he expresses his opinion of each by a letter mark. The scale in use is Ex., V.G., G., F.G., F.; or, with + and − refinements, Ex., V.G.+, V.G., V.G.−, G +, etc. Whatever be the relation of attainment at one stage to attainment at a later stage—and this, in a sense, is the general question at issue—it is obvious that the predictive value of the Head Teacher's opinion depends in the first place on its correctness as an estimate of attainment. Now, though even Head Teachers are fallible, there is little question that their *orders of merit*, based as they are on a fairly long acquaintance with individual pupils and supported by the class teachers' opinions, are almost invariably correct. But a table like Table V combines marks from many "orders of merit." It may be a very useful table if the Head Teachers' standards are all the same; it will be less useful if one man's G. means as much as another's V.G. Such wide differences in standard are not likely to occur among teachers who year by year are brought up against the more objective standard of the Leaving Certificate. Still, in comparing Head Teachers' estimates with University results we must not forget that such differences may, and probably do, exist. Moreover, University success (at least of the highest kind) calls for critical and constructive powers that have scarcely emerged at school. This is true even of subjects that are common to school and University, much more of purely University subjects like Philosophy and Economics.

Table V shows that, on the whole, Head Teachers' estimates are higher for those students who obtained Honours in Arts and Pure Science than for those who did not; and among Honours graduates slightly higher for the Firsts than for the Seconds,

Head Teacher's Opinion	Honours Degree												Ordinary Degree			Incomplete Degree			Dis-continued			No Exams Taken			Total		
	1st Class			2nd Class			3rd Class			Total																	
	Men	Women	All	Men	Women	All	Men	Women	All	Men	Women	All	Men	Women	All	Men	Women	All	Men	Women	All	Men	Women	All	Men	Women	All
Ex.	3	1	4	5	2	7	1		1	9	3	12		2	2				2	1	3	1		1	12	6	18
V.G.+	1		1	1		1				2		2													2		2
V.G.	6	9	15	17	12	29	3	1	4	26	22	48	14	35	49	2	2	4	6	2	8		1	1	48	62	110
V.G.−																				1	1					1	1
G.+	3		3	6	1	7				9	1	10	2	7	9		1	1	1		1	1	1	2	13	10	23
G.	5		5	17	5	22	3	2	5	25	7	32	25	54	79	4	1	5	3	5	8	2	1	3	59	68	127
G.−					2	2					2	2	3	3	6	1	1	2		1	1	1		1	5	7	12
F.G.+				1		1				1		1	2	3	5		1	1		1	1				3	5	8
F.G.				1		1		1	1	1	1	2	13	14	27	3	3	6	1	2	3	2		2	20	20	40
F.G.−																											
F +																											
F.													2	2	4		1	1	1		1				3	3	6
F −																											
Totals	18	10	28	48	22	70	7	4	11	73	36	109	61	120	181	10	10	20	14	13	27	7	3	10	165	182	347
[1] Median	V.G.	V.G.	V G.	G +	V.G	V.G	V G.	G.	G.	V.G	V G.	V.G	G.	G	G.	G	G − to F G.+	G to G.−	V G	G.	G.	G.	G.+	G.	G.	G	G.

No Exams. taken—Those students who sat no degree exams or of whom no records were available
Discontinued —Those students whose record did not extend beyond September 1930.
Incomplete —Those students whose record showed that they sat degree examinations after September 1930, and had not at Easter 1933 completed their degrees

One card showed no Department's marks, the certificate having been granted on account of illness. It is included above, though not in the composite mark table. Another showed no Head Teacher's estimate and is not included above.

[1] For meaning of statistical terms used here and throughout the remainder of this Report see Appendix IV.

and for the Seconds than for the Thirds. There is not much difference, however, in their estimates of those who took Ordinary degrees and of those whose degrees were incomplete at Easter 1933, while their estimates of those who discontinued their courses are comparable, except at the bottom of the scale, with their estimates of the Honours rather than of the Ordinary graduates. This is not surprising; for though some of those who discontinued did so, no doubt, because of repeated failure in examinations, many others had excellent University records, and discontinued in order to enter on other courses or for other good reasons.

The differences between the records of the men and those of the women are slight but significant. Of students with the school mark Excellent, 9 men out of 12 took Honours, but only 3 women out of 6. Of students with school marks V.G. + to V.G. −, 28 out of 50 men and 22 out of 63 women took Honours, while 14 men and 35 women took Ordinary Degrees. Of students with school marks of G. +, G., G. −, 34 men out of 77 took Honours, but only 10 women out of 85. No women with school marks below V.G. got First Class Honours, but 8 men with school marks below V.G. did so. On the whole it seems that boys are more likely than girls to surpass the teacher's estimate when they go to the University in so far as success can be judged by the number who graduate with Honours. It should be noted, however, that the women who do take Honours are quite as successful as the men, and that for professional and economic reasons men are more likely to take an Honours course than women are.

VI

GENERAL PROGNOSTIC VALUE OF LEAVING CERTIFICATE RESULTS

1. *Prognostic Value of Composite Leaving Certificate Mark*

THE task of evaluating Leaving Certificates with different combinations, numbers, and grades of subjects was simplified by the fact that the Committee were concerned only with such Leaving Certificate passes as the Entrance Board accept for admission to degree courses. For this purpose the Entrance Board require passes in four subjects; one subject must be taken from each of the Groups I, II, III, and the fourth from II, III, or IV. The groups are: I. English; II. Mathematics, Dynamics, Physical Science; III. Latin, Greek, French, German, Spanish, Italian, Gaelic; IV. Natural Science, Applied Science, Art, Music. Accordingly, in order to arrive at a Composite Mark, the Committee decided to take four subjects into account, viz. (1) English; (2) the subject in Group II with the highest mark; (3) the subject in Group III with the highest mark; (4) the highest mark among the remaining subjects in any group. A mark on the lower grade was regarded as equivalent to 70 per cent. of the corresponding mark on the higher grade. The method is open to the obvious objection that it makes the questionable assumption that 75 per cent. (say) in one subject is worth as much as 75 per cent. in another; but without that assumption it was found impossible to evaluate Leaving Certificates with different constituents. The distribution of the Composite Leaving Certificate Marks thus obtained among Honours, Ordinary, and Incomplete degrees is shown in Table VI.

Analysis of this table shows that of 43 students with Composite Marks of 70 or over, 28 took Honours of the First or Second Class, 10 took Ordinary degrees, 5 discontinued their courses, and there were none who did not complete; whereas of the 62 students with Composite Marks below 50, 2 obtained Honours, 39 took Ordinary degrees, 11 failed to complete,

TABLE VI

Composite Leaving Certificate Mark	Type of Degree Obtained: Honours 1st Class Men	1st Class Women	1st Class All	2nd Class Men	2nd Class Women	2nd Class All	3rd Class Men	3rd Class Women	3rd Class All	Totals Men	Totals Women	Totals All	Ordinary Degree Men	Ordinary Degree Women	Ordinary Degree All	Incomplete Men	Incomplete Women	Incomplete All	Discontinued Men	Discontinued Women	Discontinued All	No Exams Taken Men	No Exams Taken Women	No Exams Taken All	Totals Men	Totals Women	Totals All
95–99																											
90–94																											
85–89	1		1							1		1													1		1
80–84																											
75–79	3	3	6	2	2	4				5	5	10		2	2				1	1	2				6	8	14
70–74	3	5	8	4	5	9				7	10	17	2	6	8				3		3				12	16	28
65–69	4	2	6	9	5	14	3		3	16	7	23	7	9	16	1		1	2	1	3	2	1	3	28	18	46
60–64	5		5	12	3	15	2		2	19	3	22	11	24	35	1	2	3	1	1	2				32	30	62
55–59	1		1	14	3	17	2	3	5	17	6	23	7	24	31	2	1	3	2	1	3	2	1	3	30	33	63
50–54				6	3	9		1	1	6	4	10	20	29	49	1	2	3	4	5	9				31	40	71
45–49													6	11	17		1	1		4	4	1		1	7	16	23
40–44	1		1							1		1	4	5	9		2	2					1	1	5	8	13
35–39													2	5	7	2		2	1		1	2		2	7	5	12
30–34					1	1					1	1	2	2	4	1	1	2							3	4	7
25–29														2	2	2	2	4							2	4	6
20–24																											
15–19																			1		1				1		1
Totals	18	10	28	47	22	69	7	4	11	72	36	108	61	119	180	10	11	21	15	13	28	7	3	10	165	182	347
Mean Mark	67·3	72·5	69·1	61·7	63·4	62·2	62 7	55 7	60·2	63·2	65·0	63·8	54·5	55 2	55·0	45 5	45·6	45·6	57·7	54 7	56·3	52·7	55·3	53·3	57·9	56·6	57·2
Standard Deviation										7·6	9·7	8·4	9 1	9 7	9·5										11·0	10·9	11·0
Standard Error of Mean										·9	1·6	·8	1 2	9	·7										·9	·8	·6

6 discontinued, and 4 took no examinations. The mean Composite Mark of Honours graduates is nearly 9 higher than that of Ordinary graduates, which in turn is about 9 higher than that of those who had not completed their degrees, but slightly lower than that of those who discontinued.

First Class Honours men have a decidedly lower mean Composite Mark than First Class Honours women, while among Third Class Honours graduates the reverse holds. There is no significant difference between men and women in other categories.

These results do not differ materially from those of Table V, but they are somewhat more definite, and the data are somewhat more objective. No doubt revisers as well as Head Teachers are fallible, but their personal equations have been discounted as far as possible by the Chief Examiners, who standardise their marking in each subject, and it is on these standardised marks that the Composite Leaving Certificate Mark is based.

2. *Prognostic Value of the Number of Higher Grade Leaving Certificate Passes obtained at First Sitting*

It might be felt that a Composite Leaving Certificate Mark based on four subjects only is unfair to candidates who take more than four subjects, and who might, it may be argued, have achieved a higher average mark if they had confined themselves to four subjects. The Committee have therefore framed Tables VII (α) and VII (β), in which is shown the number of Higher Grade passes obtained at the first sitting by Honours and Ordinary graduates, and Table VII (γ), which shows the number of times students with 0–5 Highers in the Leaving Certificate Examination failed in degree examinations. On qualifying for the award of a Leaving Certificate some pupils proceed to the University at once, others return to school for another year, and generally obtain additional passes at the end of it. Since the object of this part of the inquiry was to ascertain the *predictive* value of the number of Leaving Certificate passes, it seemed better to ignore such additional passes, and to reckon only the passes obtained at the first sitting, so as to get a fairer comparison.

TABLE VII (a)

Showing the number of Highers obtained in the Leaving Certificate at the *first sitting* by Honours, Ordinary, and "not yet graduated" students in Arts and Pure Science.

Number of Highers	Degree			Totals
	Hons.	Ordinary	Not yet Graduated	
0	0	0	2	2
1	0	13	12	25
2	16	66	30	112
3	28	52	32	112
4	26	27	19	72
5	12	7	5	24
Totals . .	82	165	100	347
Mean number of Highers	3·41	2·69	2·69	2·8

Note.—Table II shows 349 students entering with Leaving Certificates, but that number includes 2 students who were granted Group Certificates under Section 8 of the Leaving Certificate Regulations after sitting one or two subjects. These are not included in Table VII (a).

Table VII (β) gives the same information in percentage form.

TABLE VII (β)

Number of Highers	Degree		
	Honours	Ordinary	Not yet Graduated
0	0·0	0·0	2·0
1	0·0	7·9	11·9
2	19·5	40·0	30·7
3	34·2	31·5	31·7
4	31·7	16·4	18·8
5	14·6	4·2	4·9
	100·0	100·0	100·0

The distributions given in Table VII (β) are shown graphically in fig 1.

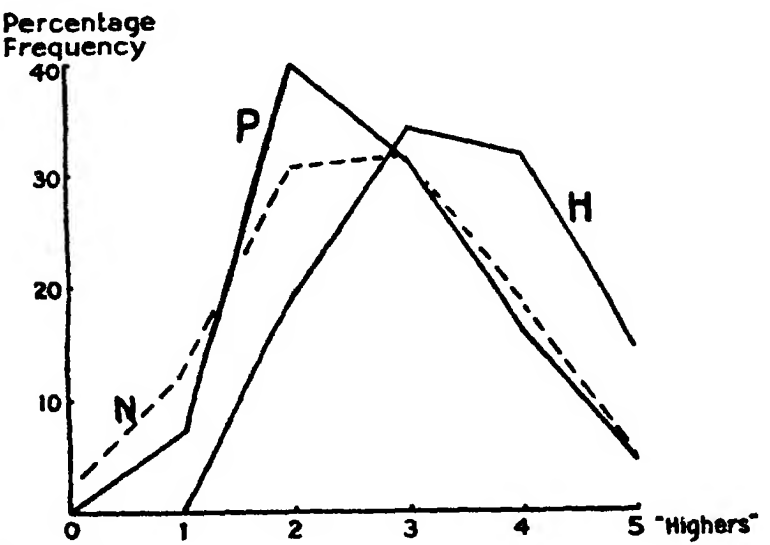

FIG. 1.—Percentage frequency polygon showing number of "Honours" (H), "Pass" (P), and "Not yet graduated" (N) students who had 0, 1, 2, 3, 4, or 5 "Highers" (at the first sitting) in the Leaving Certificate examination.

Table VII (α) shows that the average number of Higher Grade passes obtained at the Leaving Certificate examination at first sitting was highest among those who afterwards graduated with Honours, and that there is no difference between the averages of the other two groups. The distributions given in Table VII (β), and shown graphically in fig. 1, indicate clearly the superiority of the Honours group in this respect and the similarity between the other two groups.

Table VII (γ) shows that the mean number of failures in degree examinations increases as the number of Leaving Certificate Higher Grade passes decreases. If the number of such passes is very large, the number of failures is likely to be small, whereas with no Higher Grade passes or one Higher Grade pass a large number of failures is common. The number of failures among those with 2 or 3 Higher Grade passes varies considerably.

If Table VII (δ) be compared with Table VII (γ) it will be seen that of the 205 failures recorded against students who had gained 3 Higher Grade passes in the Leaving Certificate examination, no fewer than 103 are due to 14 individuals: the average for the remainder is very little over one failure per student.

TABLE VII (γ)

Table showing the number of failures in degree examinations, up to and including those held in October 1933, of students who gained 0, 1, 2, 3, 4, 5 Highers at their first presentation.

No. of Highers	Number of Failures in Degree Exams																	Freq.	Mean Number of Failures	St. Dev.
	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16			
0	1			1	2			1										5	3·60	2·24
1	4	5	3	1	3	2	1		2	1	1		1			1		25	4·16	4·03
2	36	16	17	7	8	4	5	4	3	1	1	3	1		1	2		109	2·87	3·56
3	45	21	14	7	8	3	1	5	2	2				1				109	1·88	2·53
4	51	10	6	3	1												1	72	0 71	2·03
5	18	2																20	0·10	
																		340		

The above table does not include as Highers the less academic subjects such as Art and Music Additional subjects such as Elementary Analysis, Geometry, and Dynamics, and one case of Gaelic, are not included.

This table does not include students whose University career was not entered on the record cards; Table VII (α) includes them.

Mean number of failures = 2·01. Standard deviation = 2·92.

TABLE VII (δ)

Cases of Individual Discrepancy

No. of Highers in L C. at 1st Attempt	Subjects[1]	Number of Failures in Individual Univ Degree Exams																											Total Number of Failures	Degree Obtained	Duration of Course (To 1932)	Number of Failures (1933 onwards)	Total Number of Failures	Degree Obtained
		English (Ord)	English (2nd Co)	Hist (Ord)	Econ Hist (Ord)	French (Ord)	French (2nd Co)	Latin (Ord)	Phil (Ord)	Mor Phil (Ord)	Psychol (Ord)	Pol Econ (Ord)	Geog (Ord)	Maths (Ord)	Maths. (2nd Co)	Nat Phil (Ord)	Chem (Ord)	Subjects for B Sc Degree: Maths I	Maths. II	Chem I	Chem II	Chem. III	N Phil I	N Phil. II	Zoo. I	Zoo II	Geol I	Botany						
3	E M F		3											1	1														5	M A.	4			
3	E M.G					1	1			1			1		1														5	M A.	3			
3	E M S		1	1	1			2																					5		4		5	M.A.
3	E.L F			1							2	2	1																6		4		6	
3	E M F.								3							4													7	M.A.	4			
3	E M S																	1		1			1	2	2				7		4	1	8	
3	E M S																			1		3		2			1		7		4			
3	E.M S					4											3												7		4	4	11	
3	E.L F						2		3			2																	7	M.A.	4			
3	E M F.	1				1	1	4							1														8	M.A.	4			
3	M.F.S																		2	1			2	3					8		4	1	9	
3	E M.F	1				2				1	1		1	1		2													9	M.A.	4			
3	M.F.S																		2		1	1		5					9		4		9	B.Sc.
3	M.S A.																	1		2	3		1			4		2	13		4	2	15	
		2	4	2	1	8	4	6	6	2	3	4	3	2	3	6	3	2	4	5	4	4	4	12	2	4	1	2	103					

[1] E = English; M = Mathematics; F = French; G = German; L = Latin; S = Science; A = Art.

Table VII (ϵ) and fig. 2 show that the more Higher Grade passes a pupil gained, whether at one or more sittings, the higher on the average were his marks in particular subjects.

TABLE VII (ϵ)

Showing frequency and mean Leaving Certificate mark in various subjects of pupils awarded 1, 2, 3, 4, etc. Highers in Leaving Certificate examination.

No. of Highers	English		Latin		French		German		Science	
	n	Mean	*n*	Mean	*n*	Mean	*n*	Mean	*n*	Mean
1	18	57·5			10	46·6				
2	56	59·20	3	57·00	42	55 69			12	53·33
3	74	59·18	18	56 45	52	55·73	4	61·0	22	56·73
4	103	55·69	55	58·49	84	62·48	19	63·63	34	59·15
5	58	63·88	43	61·95	50	65·12	17	66·88	23	62·87
6	14	61·93	10	64·3	20	66 90	3	68·0	14	70·0
7	6	63·33	2	62·5	8	60·0			8	66·38
8	2	70·5	2	72·0	2	66			2	74·0

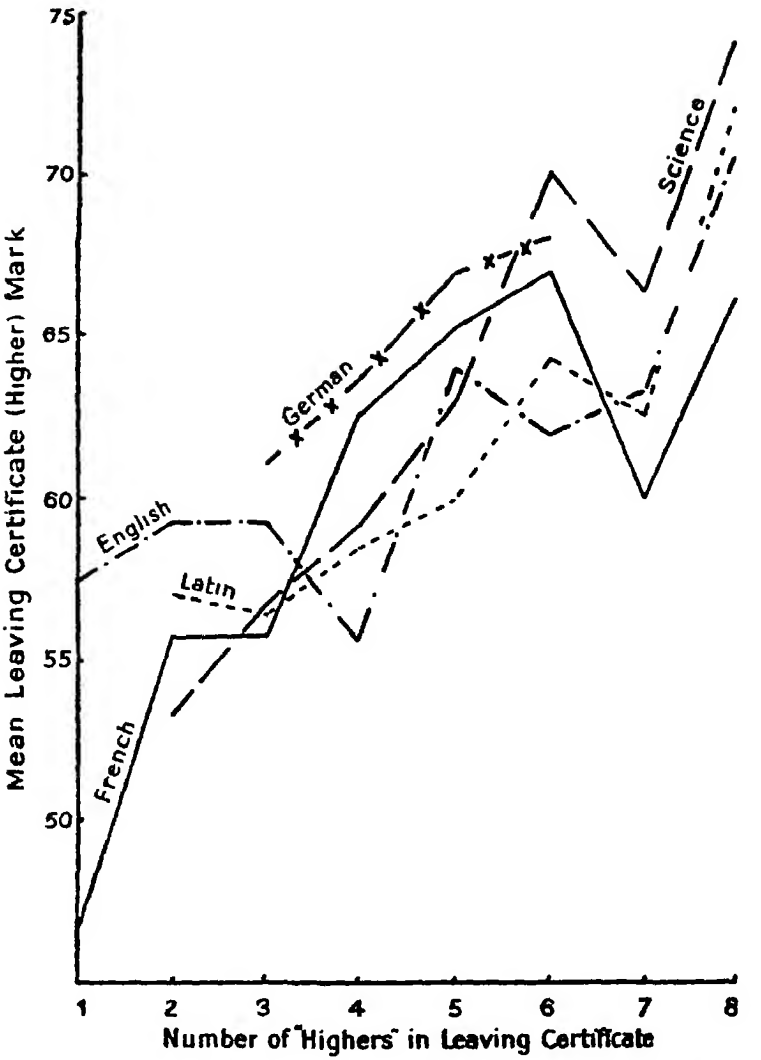

FIG. 2.—Showing relationship between mean Leaving Certificate examination (Higher) mark in English, Latin, French, German, and Science, and the number of "Highers" in the Leaving Certificate.

VII

EFFECT ON UNIVERSITY RESULTS IN ARTS AND PURE SCIENCE OF REMAINING FOR AN ADDITIONAL YEAR AT SCHOOL AFTER QUALIFYING FOR LEAVING CERTIFICATE

It has been mentioned (p. 25) that pupils who have "qualified for the award of a Leaving Certificate" not infrequently return to school for another year, at the end of which they often obtain additional Leaving Certificate passes. Some of them spend this extra year in preparation for the Bursary Competition [1] of the Universities, others in preliminary training for the teaching profession. What effect has the added year on success at the University?

It is clear from Table VIII that pupils who aim at Honours commonly take an additional year at school: of the 94 Honours students under investigation 84 did so. Of those who graduated 91 per cent. of the Honours students remained an additional year and 56 per cent. of the Ordinary graduates. Of 74 pupils who took the additional year 70 gained First or Second Class Honours, whereas 6 out of 7 who did not take the additional year were likewise awarded First or Second Class Honours. The number of the latter is so small that comparisons are unreliable. When we consider those who took Ordinary degrees we find that of 128 who took the extra year at school 43 had not completed their degree in 1934, and of 98 who did not take the extra year 32 had not completed their degree at the same time. The proportions are nearly the same, so that no conclusion can be drawn regarding the value of the extra year at school.

The fact that 91 per cent. of the Honours students and 56 per cent. of the Ordinary degree students had an extra year at school might suggest that the extra year has been an advantage. But it should be remembered that this affords no proof of the advantage of the additional year. Table IX shows that the Honours students on the whole qualify for the award of the Leaving Certificate at an earlier age than the Ordinary degree students, which is an indication of superior native capacity, and their success at the University may be due to this natural superiority rather than to the additional year at school.

[1] *I.e.* competition for entrance scholarships.

TABLE VIII

Showing the number of students who entered the University immediately on attaining the Leaving Certificate and those who remained an additional year at school, and the University successes of the respective groups.

	Hons Degree				Ord Degree	Incomplete		
	1st Class	2nd Class	3rd Class	Totals		Hons	Ord	Totals
Entered University on attaining Leaving Certificate	1	5	1	7	66	3	32	35
Remained at school after attaining Leaving Certificate, adding no subject	4	17		22[1]	21	1	12	13
Remained at school after attaining Leaving Certificate, adding subjects .	15	34	4	53	64	8	31	39

[1] One was awarded Honours but no class was shown

Note.—Totals differ from those of Table II, as only those who actually gained the Leaving Certificate are included.

VIII

RELATION BETWEEN AGE AT ENTRANCE TO THE UNIVERSITY AND NUMBER OF YEARS TAKEN TO GRADUATE

TABLE IX

Showing ages of students on entrance to the University and the number of years taken to complete their degree

Age at Entrance	Pass Degree		Hons. 4 Years	Pass Degree		Hons. 4 Years
	3 Years	4 Years		3 Years	4 Years	
Years.				%	%	%
16–16½	3	0	0	1·8	0 0	0·0
17–17½	41	16	23	24·7	34·8	22·5
18–18½	76	14	53	45·8	30·4	52·0
19–19½	30	12	21	18·1	26·1	20·6
20–20½	10	1	2	6·0	2·2	2·0
21–21½	2	1	1	1·2	2·2	1·0
22–22½	1	1	..	0 6	2·2	..
23–23½	2	..	..	1·2	..	..
24–24½	..	..	2	..	..	2·0
25–25½	..	..	..	..	..	..
26–26½	..	..	..	..	..	..
27–27½	1	1	..	0·6	2·2	..
Mean age in years .	18·69	18·80	18·67			
σ in years .	1·30	1·44	1·13			

The first column of Table IX gives the age at entrance to the University of students who took three or four years to

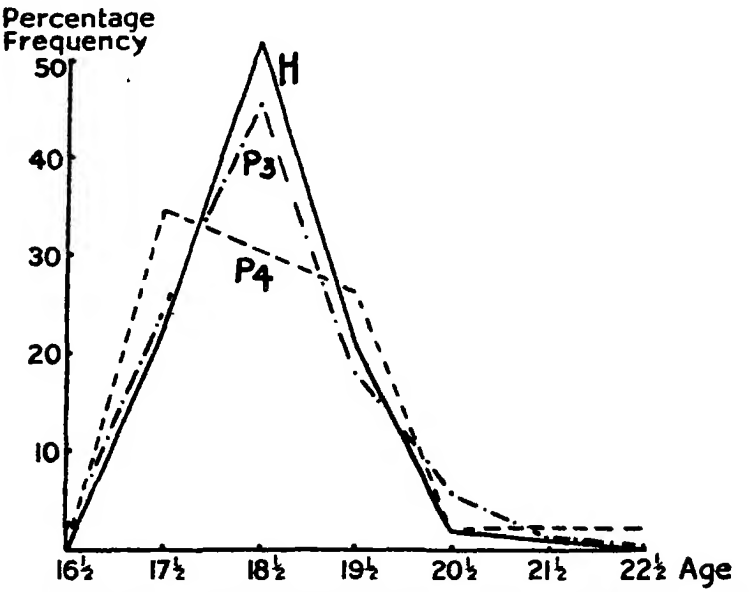

FIG. 3.—Percentage frequency polygon showing age at entrance to University and years taken to graduate

H = Honours group—4 years to graduate
P_3 = Pass ,, —3 ,, ,,
P_4 = ,, ,, —4 ,, ,,

graduate; the last three columns give the same data in percentages, and these percentages are shown graphically in fig. 3.

The average age at entrance to the University of the students who graduated with Honours was 18 years 8 months, which is the same as that of those who took a Pass degree in three years, and only a month less than that of those who took a Pass degree in four years. There is very little difference in the dispersions of the three groups; the greatest is that of the Pass students who took four years to graduate.

The similarity of the three groups in mean age at entrance to the University is interesting in view of the fact that there is a greater tendency among the Honours students than among the others to remain at school for a year after the completion of the Leaving Certificate.

IX

INFLUENCE OF EMPLOYMENT DURING UNIVERSITY COURSE ON NUMBER OF YEARS TAKEN TO GRADUATE

Of the 472 students in Arts and Pure Science under investigation 17 reported themselves as employed during their University course, but only in one instance was it found that the duration of the course was affected by such employment.

PART II

ARTS AND PURE SCIENCE

DEDUCTIONS REGARDING INDIVIDUAL SUBJECTS

I

DATA AVAILABLE

So far we have dealt with the predictive value of general estimates of attainment at the leaving-school age, as represented by the Head Teacher's opinion, the Composite Leaving Certificate Mark, and the number of Higher Grade passes gained at first sitting. It remains to consider how far estimates of school attainments in individual subjects are predictive of University success in the Faculties of Arts and Pure Science in those subjects or in others.

The data available for comparison are (A) Teachers' marks, (B) Department's marks, (C) marks in University class examinations, (D) marks in degree examinations. A and B are compared in Tables X to XIV in respect of Leaving Certificate English, Mathematics, Latin, French, and Science, all on the Higher Grade. C and D are compared in Tables XV to XIX in respect of University Ordinary English, Mathematics, Latin, French, and German. These two sets of comparisons have no predictive value, but they are interesting for other reasons. Predictive value belongs to Tables XX to XXXVII, in which A and B on the one hand are compared with C and D on the other.

II

CORRELATION BETWEEN DEPARTMENT'S MARKS AND TEACHERS' MARKS IN SAME SUBJECT

TABLE X

Showing Department's marks and Teachers' marks in English

Department's Marks \ Teachers' Marks	40–43	44–47	48–51	52–55	56–59	60–63	64–67	68–71	72–75	76–79	80–83	84–87	88–91	Totals
81–84						1	1			1			1	4
77–80						2	3		3					8
73–76					1	3	2	3	4		2			15
69–72			1	1	4	5	6	3	4	2				26
65–68			2	2	8	10	7	6	7	7	1			50
61–64			2	3	10	16	9	3	3			1		47
57–60			3	9	15	13	14	4	6					64
53–56			7	16	12	11	7	6	3					62
49–52	1	1	3	13	14	7	5	1						45
45–48			3	5	1									9
41–44			1	1										2
Totals	1	1	22	50	65	68	54	26	30	10	3	1	1	332

$r = \cdot 52$

$PE_r = \cdot 027$

TABLE XI

Showing Department's marks and Teachers' marks in Mathematics.

Department's Marks \ Teachers' Marks	35–38	39–42	43–46	47–50	51–54	55–58	59–62	63–66	67–70	71–74	75–78	79–82	83–86	87–90	Totals
97–100											1	1		1	1
93–96											1	1			2
89–92									3		1	1	1		6
85–88						1		1			1	2	1		6
81–84						1	3	2	4	1	1	1	1	1	15
77–80					1	2		4	4	1	4	1			17
73–76					1	4		1	4	2	4	3	1		20
69–72				1	4	5	5	1	4	7					27
65–68		1		1	1		11	4	5	2	1				26
61–64			2	2	4	8	7	2	4	1	1				31
57–60		1		5	3	8	4	4	4	1	1				31
53–56			1	3	6	6	9	2	1	1	2				31
49–52				3	6	5	6	3			1		1		25
45–48				3	4	3	1								11
41–44					2	2	1								5
37–40					3			1							4
33–36	1		1		1	1		1							5
29–32					1										1
Totals	1	2	4	18	37	46	47	26	33	16	18	9	5	2	264

$r = 58$
$PE_r = 028$

TABLE XII

Showing Department's marks and Teachers' marks in Latin.

Department's Marks \ Teachers' Marks	34–37	38–41	42–45	46–49	50–53	54–57	58–61	62–65	66–69	70–73	74–77	78–81	82–85	Totals
90–93											1			1
86–89														0
82–85													1	1
78–81					2	1				1				4
74–77					3	1	2	1	3	2	3			15
70–73						3	3	4	2	2				14
66–69					7	8	3	2	1	1				22
62–65					6	11	5	6	1	2	1			32
58–61				1	8	4	4	5	3	1				26
54–57			1		18	6	5	5	2		1			38
50–53			1	1	11	8	6	3	3	2				35
46–49	1				5	2	1	1						10
42–45			1			2	1	1						5
38–41	1		1		3			1		1				7
34–37		1		1		2								4
30–33					1			1		1				3
26–29		1												1
Totals	2	2	4	3	64	48	30	30	15	13	6	0	1	218

$r = .37$

$PE_r = .04$

TABLE XIII

Showing Department's marks and Teachers' marks in French

Department's Marks \ Teachers' Marks	33–35	36–38	39–41	42–44	45–47	48–50	51–53	54–56	57–59	60–62	63–65	66–68	69–71	72–74	75–77	78–80	Totals
87–89															1		1
84–86																	0
81–83															1	1	2
78–80							1				1		2		1		5
75–77												2	2		1		5
72–74							1			3	5		1	3	3	2	18
69–71								4	1	3	1	4	3	1	3	4	24
66–68						1	2		1	2	5	5	4	5	3		28
63–65							4	2	1	8	4	1	2	2	1		25
60–62						1	1	3	6	7	3	1	5				27
57–59			1		1	1	3	6	5	4	3	3	1				28
54–56						3	3	6	2	5	5	1					25
51–53						2	3	10	1	7		2	1		1		27
48–50			2			3	3	4	8	2	2						24
45–47						1	1	2	1	1					1		7
42–44			1				2	4	2								9
39–41						1				1	1						3
36–38	1							1			1						3
33–35		1	1														2
Totals	1	1	5	0	1	13	24	42	28	43	31	19	21	11	16	7	263

$r = 60$

$PE_r = 077$

TABLE XIV

Showing Department's marks and Teachers' marks in Science

Department's Marks \ Teachers' Marks	39–41	42–44	45–47	48–50	51–53	54–56	57–59	60–62	63–65	66–68	69–71	72–74	75–77	78–80	81–83	84–86	Totals
93–95															1		1
90–92													1			1	2
87–89																	0
84–86																	0
81–83											1						1
78–80									1				1	1	2		5
75–77								2					3				5
72–74								1	3			2		1		1	8
69–71								3			2						5
66–68					1	2	1				2	1					7
63–65					1	1	1	4	1	2	1	1					12
60–62					1	2	1	3	3	1							11
57–59					1	2	3	3	2	1	3						15
54–56				1	2	6	5	3	2								19
51–53				2	1	3	1	5			1						13
48–50	1			5	6	3	5	1				1					22
45–47				1	1												2
42–44								1									1
39–41					1												1
Totals	1	0	0	9	15	19	17	26	12	4	10	5	5	2	3	2	130

$r = 69$

$PE_r = 031$

While the mean marks in these two estimates, Department's marks and teachers' marks, differ very slightly (see p. 82), the dispersions differ more widely, being greater in the former.

The correlations in the various subjects are as follows:—

Subject	r	PE_r
English . . .	·52	·027
Mathematics . . .	58	·027
Latin	37	·040
French	60	077
Science . . .	·69	·031

Except in Science, these values of r are not very high. It must be remembered, however, that in dealing with selected groups even a low correlation coefficient may be significant. And these groups are small and selected, since they include only those who gained the Leaving Certificate. Had they included also those who failed, the correlation coefficients would probably have been higher. Moreover, we must allow for the natural disinclination of teachers to give marks below 50 to pupils who, they think, have a chance of passing.

III

RELATION BETWEEN DEGREE EXAMINATION MARK AND UNIVERSITY CLASS EXAMINATION MARK IN SAME SUBJECT

THE following tables show (α) the mean, standard deviation, etc., of degree and class marks in English, Mathematics, Latin, French, and German; and (β) the correlations between these marks.

TABLE XV (α)

ENGLISH

Showing mean, standard deviation, etc , of degree and class marks in English (Ordinary)

		Frequency	Mean Mark	Standard Deviation	Standard Error of Mean
Men and Women	Degree Exams	216	57·5	9·1	·6
Men		78	58·4	10·1	1·1
Women		138	57·0	8·6	·7
Men and Women	Class Exams.	216	55·3	7·9	·5
Men		78	56·9	8·7	1·0
Women		138	54·4	7·3	·6

TABLE XV (β)

ENGLISH

Showing degree and class marks in English (Ordinary)

Class Marks \ Degree Marks	20–24	25–29	30–34	35–39	40–44	45–49	50–54	55–59	60–64	65–69	70–74	75–79	Totals
80–84													
75–79										1			1
70–74								3		4	3		10
65–69					1		1	2	6	6	1		17
60–64						1	1	9	10	8	5		34
55–59						1	8	8	17	11	6		51
50–54					3	6	15	16	7	8			55
45–49	1	1		4	6	7	3	3	3	1			29
40–44				1	3	5	4		1	1			15
35–39						1	2		1				4
30–34													
Totals	1	1		5	13	21	34	41	45	40	15		216

$r = 57$

$PE_r = 031$

TABLE XVI (a)

Mathematics

Showing mean, standard deviation, etc., of degree and class marks in Mathematics (Ordinary).

		Frequency	Mean Mark	Standard Deviation	Standard Error of Mean
Men and Women	Degree Exams.	81	54·5	18·9	2·1
Men		44	55·2	18·0	2·7
Women		37	53·8	20·0	3·3
Men and Women	Class Exams.	81	31·1	8·1	·9
Men		44	30·4	8·1	1·2
Women		37	32·1	8·1	1·3

This table refers only to those students whose marks in degree examinations were given (*i.e.* non-exempt, etc., see p. 55).

TABLE XVI (β)

MATHEMATICS

Showing degree examination and class marks in Mathematics of those who did not gain exemption from the degree examination

Class Marks \ Degree Marks	0–4	5–9	10–14	15–19	20–24	25–29	30–34	35–39	40–44	45–49	50–54	55–59	60–64	65–69	70–74	75–79	80–84	85–89	90–94	95–99	Totals
50–54																					
45–49												1				2	1				4
40–44											1			2	2			2			7
35–39							1	2	2	2			2	1	1	2	1	3	1		18
30–34					1		2	2	2	3	3	2	1	2	4			1			23
25–29				1			1	3	2	1	3	2									13
20–24									2	1			1				1				5
15–19		1			1	1		1	2	2	1			1							10
10–14							1														1
5–9																					
0–4																					
Totals		1		1	2	1	5	8	10	9	8	5	4	6	7	4	3	6	1		81

$r = 51$
$PE_r = 055$

TABLE XVII (α)

Latin

Showing mean, standard deviation, etc., of degree and class marks in Latin (Ordinary)

		Frequency	Mean Mark	Standard Deviation	Standard Error of Mean
Men and Women	Degree Exams.	151	59·9	13·6	1·1
Men		73	63 0	12 8	1·5
Women		78	56·9	13·7	1·6
Men and Women	Class Exams.	151	56·0	13 1	1·1
Men		73	57·3	12·3	1·4
Women		78	54·8	13·6	1·5

TABLE XVII (β)

LATIN

Showing degree and class marks in Latin (Ordinary).

Degree Marks

Class Marks	20–24	25–29	30–34	35–39	40–44	45–49	50–54	55–59	60–64	65–69	70–74	75–79	80–84	85–89	Totals
90–94														1	1
85–89															
80–84											2		3		5
75–79											2	4	1		7
70–74									1	2	2	2	1		8
65–69									2	5	6	3			16
60–64						2		4	4	8	2	1			21
55–59					2	1	4	4	6	3	4	1		1	26
50–54					1	3	8	3	6	1	1		1	1	25
45–49				1	1	1	4	3	1	2	1				14
40–44			1	3	3	4	2			1					14
35–39		2	1		1	1				1					6
30–34			1	1	1										3
25–29						1	1								2
20–24	1				2										3
Totals	1	2	3	5	11	13	19	14	20	23	20	11	6	3	151

$r = 75$

$PE_r = .024$

TABLE XVIII (*a*)

French

Showing mean, standard deviation, etc., of degree and class marks in French (Ordinary).

		Frequency	Mean Mark	Standard Deviation	Standard Error of Mean
Men and Women	Degree Exams.	215	55·9	15·1	1·0
Men		63	56·7	16 0	2 0
Women		152	55·6	14·7	1·2
Men and Women	Class Exams.	215	55 3	13·1	·9
Men		63	54 1	11 9	1·5
Women		152	55 8	13·5	1·1

TABLE XVIII (β)

French

Showing degree and class marks in French (Ordinary).

Class Marks \ Degree Marks	15–19	20–24	25–29	30–34	35–39	40–44	45–49	50–54	55–59	60–64	65–69	70–74	75–79	80–84	85–89	90–94	Totals
95–99													1				1
90–94											1		1	1			3
85–89										1		1					2
80–84											2			1			3
75–79										2				6	2	1	11
70–74											1	2	2	2			7
65–69									1	4	3	5	4	1			18
60–64							1	2	5	3	8	3	5	1			28
55–59					1		4	13	6	6	3	1					34
50–54			1	4	4	3	3	6	7	5	2	1					36
45–49			1	2	2	2	6	7	4	3	2						29
40–44		1	1	2	4	3	1	6	2								20
35–39	1	1	3	1	2	3	3		2								16
30–34			1		1	1	1										4
25–29						2											2
20–24				1													1
Totals	1	2	7	10	14	14	19	34	27	24	22	13	13	12	2	1	215

$r = 76$

$PE_r = 019$

TABLE XIX (α)

German

Showing mean, standard deviation, etc , of degree and class marks in German (Ordinary).

		Frequency	Mean Mark	Standard Deviation	Standard Error of Mean
Men and Women	Degree Exams	47	61·8	9·1	1·3
Men		9	58·4	9·9	3·3
Women		38	62 6	8·7	1 4
Men and Women	Class Exams.	47	67·0	7·5	1·1
Men		9	65·9	7 4	2·5
Women		38	67·3	7·5	1·2

TABLE XIX (β)

German

Showing degree and class marks in German (Ordinary).

Class Marks \ Degree Marks	40–43	44–47	48–51	52–55	56–59	60–63	64–67	68–71	72–75	76–79	Totals
80–83										1	1
76–79								1	1	2	4
72–75								6	2		8
68–71					2	3	7				12
64–67			2		3	1	2	1			9
60–63		1	2	1		1					5
56–59		1	2	1	1	1					6
52–55				1							1
48–51											0
44–47											0
40–43	1										1
Totals	1	2	6	3	6	6	9	8	3	3	47

$r = \cdot 85$ $\quad PE_r = \cdot 028$

It will be observed that with the exception of German the average mark in degree examinations is generally higher than the average mark in class examinations. The difference, however, is comparatively slight in all subjects except Mathematics where it is very great. In Mathematics students who have made more than a certain percentage in class examinations are exempted from the degree examination altogether. Only students who were not thus exempted are included in the tables here.

The correlations are high, ranging from ·51 to ·85, the explanation doubtless being that one individual, the professor, participates in both estimates. They are:

Subject	r	PE_r
English	·57	·031
Mathematics . . .	·51	·055
Latin	·75	·024
French . . .	·76	·019
German	·85	·028

IV

RELATION OF DEPARTMENT'S MARKS AND TEACHERS' MARKS TO UNIVERSITY DEGREE AND CLASS MARKS IN INDIVIDUAL SUBJECTS

In the following tables the Department's marks and the teachers' marks in English, Mathematics, Latin, and French are correlated with the marks obtained in these subjects by the same students in University class examinations and in the examinations for Ordinary degrees at first sitting. The Department's marks are compared with degree marks in Tables XX to XXIII, and with class marks in Tables XXVIII to XXXI; the teachers' marks are compared with degree marks in Tables XXIV to XXVII, and with class marks in Tables XXXII to XXXV. The results of these comparisons are summarised in Tables XXXVI and XXXVII, and certain conclusions are then drawn as to the predictive value of Department's marks and teachers' marks in the several subjects.

In the case of Mathematics, comparisons between Department's or teachers' marks and degree marks are made difficult by the fact already mentioned, that students who have reached a good standard in class examinations are exempted from the degree examination. These comparisons have accordingly been supplemented by Tables XXI (β) and XXV (β), which show the distribution of Department's marks and teachers' marks among those who were exempted from the degree examination, those who passed in it, and those who failed.

IV (*a*)

Department's Marks and Degree Marks

TABLE XX

English

Showing Department's marks in Leaving Certificate examination in English and degree marks in First Ordinary English.

Department's Marks	Degree Marks 38–41	42–45	46–49	50–53	54–57	58–61	62–65	66–69	70–73	Totals
80–83								2		2
76–79		1			2	1	1	1	2	8
72–75				1	1	1	4	3		10
68–71			1	1	2	3		3	4	14
64–67				4	5	8	6	5	1	29
60–63			2		5	7	4	3	1	22
56–59	1	2	3	4	6	2	9	5		32
52–55	1	2	5	9	2	2	3	1	2	27
48–51	3		2		2		2		1	10
Totals	5	5	13	19	25	24	29	23	11	154

$r = .36$
$PE_r = .047$

TABLE XXI (a)

Mathematics

Showing Department's marks in Leaving Certificate examination in Higher Mathematics and degree examination in First Ordinary Mathematics

Department's Marks \ Degree Marks	5–9	10–14	15–19	20–24	25–29	30–34	35–39	40–44	45–49	50–54	55–59	60–64	65–69	70–74	75–79	80–84	85–89	90–94	Totals
90–94															1	1			2
85–89																			
80–84							1				1		1					1	4
75–79											1			2	1				4
70–74	1						2		1	1			1		1		2		9
65–69						2	2	1					1	1			1		8
60–64					1	1		3		2	2	2		1	1		1		14
55–59				1		1		1	2	1		2		2		1			11
50–54				1		1	1	2	1	2	1		2				1		12
45–49							1							1					2
40–44									1							1			2
35–39									1										1
30–34								1	1										2
25–29																			
20–24			1																1
Totals	1		1	2	1	5	7	8	7	6	5	4	5	7	4	3	5	1	72

$r = \cdot 30$
$PE_r = \cdot 072$

Degree marks $M = 54\,8$, $\sigma = 19\,4$, $\sigma_m = 2\,3$
Department's marks $M = 61\,4$, $\sigma = 13\,0$, $\sigma_m = 1\,5$

M = mean σ = standard deviation
σ_m = standard error of the mean

TABLE XXI (β)

Mathematics

Showing distribution of Department's marks in Leaving Certificate examination in Higher Mathematics of those who passed, failed, or were exempted from the degree examination in First Ordinary Mathematics.

Mean mark for all = 64·5

Department's Marks for Leaving Certificate (Higher)	Men and Women				Men				Women			
	Pass	Fail	Exempt	Non-Exempt	Pass	Fail	Exempt	Non-Exempt	Pass	Fail	Exempt	Non-Exempt
95–99			1				1					
90–94	1		2	1			1		1		1	1
85–89			4				3				1	
80–84	3	1	9	4	3		3	3		1	6	1
75–79	4		8	4	1		2	1	3		6	3
70–74	6	3	13	9	4	2	7	6	2	1	6	3
65–69	3	5	20	8	1	2	9	3	2	3	11	5
60–64	11	3	5	14	6	1	3	7	5	2	2	7
55–59	9	2	10	11	7		3	7	2	2	7	4
50–54	9	3	10	12	5	2	6	7	4	1	4	5
45–49	1	1	1	2	1			1		1	1	1
40–44	2		2	2	1		1	1	1		1	1
35–39	1		1	1					1		1	1
30–34	1	1	1	2		1		1	1		1	1
25–29												
20–24		1		1						1		1
15–19												
Means	61·4	59·6	67·4	60·9	62	59 5	68·4	61 5	61 1	59·5	66 5	60·5
Freq.	51	20	87	71	29	8	39	37	22	12	48	34

TABLE XXII

Latin

Showing Department's marks in Leaving Certificate examination in Higher Latin and degree marks in Ordinary Latin

Department's Marks	Degree Marks 35–39	40–44	45–49	50–54	55–59	60–64	65–69	70–74	75–79	80–84	85–89	Totals
90–94											1	1
85–89												
80–84								1	1	1		3
75–79								3	2	1		6
70–74						1	1	5	2		1	10
65–69						2	3	2	1		1	9
60–64				2	2	2	1	5	2			14
55–59	1		1	1	4	2	7	3	1			20
50–54			3	1	3	4	1	4	2	1		19
45–49			1									1
40–44	1	1										2
35–39					1							1
30–34				1								1
Totals	2	1	5	5	10	11	13	23	11	3	3	87

$r = \cdot 59$ $\quad PE_r = 047$

Degree marks M = 66 0, $\sigma = 10\,9$, $\sigma_m = 1\,17$

Department's marks M = 61·1; $\sigma = 10\,5$, $\sigma_m = 1\,12$

TABLE XXIII

French

Showing Department's marks in Leaving Certificate examination in Higher French and degree marks in Ordinary French.

Department's Marks	Degree Marks 20–24	25–29	30–34	35–39	40–44	45–49	50–54	55–59	60–64	65–69	70–74	75–79	80–84	85–89	90–94	Totals
75–79									1			1	1	1		4
70–74				1				3	1	4	6	5	6	1		27
65–69						2	3	3	1	4	3	4	2		1	23
60–64				1	1	5	4	8	6	3	1	1	2			32
55–59			2	2	4	3	6	1	3	5	2	1				29
50–54	1	1	1	1	2		8	5	5	3						27
45–49		1	1			1	1		1							5
40–44			1	2	2	2			1							8
35–39					1		1	1								3
Totals	1	2	5	7	10	13	23	21	19	19	12	12	11	2	1	158

$r = 59$ $\quad PE_r = \cdot 035$

Degree marks· M = 59·0, $\sigma = 14\,3$, $\sigma_m = 1\,14$

Department's marks. M = 60·2, $\sigma = 9\,2$, $\sigma_m = 0\,73$

IV (*b*)

Teachers' Marks and Degree Marks

TABLE XXIV

English

Showing Teachers' marks in English for Leaving Certificate and degree marks in First Ordinary English.

Teachers' Marks \ Degree Marks	36–39	40–43	44–47	48–51	52–55	56–59	60–63	64–67	68–71	72–75	76–79	Totals
84–87									1			1
80–83							1	1				2
76–79			1		2	1	1	2			1	8
72–75				1	1	3	2	1	1			9
68–71			1		2	2	1	4	6			16
64–67			1	2	1	4	6	6	8	2		30
60–63			2	3	5	9	6	7	1			33
56–59		4	2	5	2	4	6	2				25
52–55	2	1	2		4	5	3	2	1			20
48–51		1		3	1		2					7
44–47	1									1		2
Totals	3	6	9	14	18	28	28	25	18	3	1	153

$r = .42$
$PE_r = .045$

TABLE XXV (a)

Mathematics

Showing Teachers' marks in Higher Mathematics for Leaving Certificate and degree marks in Ordinary Mathematics.

Teachers' Marks \ Degree Marks	5–9	10–14	15–19	20–24	25–29	30–34	35–39	40–44	45–49	50–54	55–59	60–64	65–69	70–74	75–79	80–84	85–89	90–94	Totals
85–89																			
80–84											2								2
75–79												1							1
70–74						1		1	1				1	1	1		1	1	8
65–69						1	1		1			2	1	1	1	1			9
60–64				1		2	2	4	1					1			3		14
55–59	1			1	1	1	2		1	3		1	2	1	2	1			17
50–54							1	3	4	3	2			3		1	1		18
45–49																			
Totals	1			2	1	5	6	8	8	6	4	4	4	7	4	3	5	1	69

$r = .08$

$PE_r = .081$

Degree marks $M = 55.3$, $\sigma = 19.1$, $\sigma_m = 2.3$

Teachers' marks. $M = 62.1$, $\sigma = 9.8$, $\sigma_m = 1.2$

TABLE XXV (β)

Mathematics

Showing distribution of Teachers' marks in Higher Mathematics for Leaving Certificate of those who passed, failed, or were exempt from sitting the Ordinary degree examination in Mathematics.

Teachers' Marks	Men and Women				Men				Women			
	Pass	Fail	Exempt	Non-Exempt	Pass	Fail	Exempt	Non-Exempt	Pass	Fail	Exempt	Non-Exempt
90–94			1				1					
85–89			4				2				2	
80–84	2		3	2	2		1	2			2	
75–79	1		8	1	1		6	1			2	
70–74	7	1	14	8	4	1	4	5	3		10	3
65–69	5	3	11	8	2	2	3	4	3	1	8	4
60–64	7	7	16	14	2	2	9	4	5	5	7	10
55–59	11	6	13	17	8	1	5	9	3	5	8	8
50–54	17	1	11	18	9	1	8	10	8		3	8
Freq.	50	18	81	68	28	7	39	35	22	11	42	33
Means	60 4	61 2	66 1	60·6	61·1	62·7	65·6	61 4	59·5	60 2	66·5	60 0

TABLE XXVI

Latin

Showing Teachers' marks in Higher Latin for Leaving Certificate and degree marks in Ordinary Latin.

Teachers' Marks \ Degree Marks	30–34	35–39	40–44	45–49	50–54	55–59	60–64	65–69	70–74	75–79	80–84	85–89	90–94	Totals
90–94														
85–89											1			1
80–84														
75–79										2		1		3
70–74					1			1	2	2	1	1		8
65–69				1			2	4	4	2				13
60–64				1			2	2	4	3	1	1		14
55–59				1	1	2		1	2	1				8
50–54		1		2	2	4	2	3	3					17
45–49														
Totals		1		5	4	6	6	11	15	10	3	3		64

$r = 53$
$PE_r = 061$

Degree marks $M = 67\cdot0$, $\sigma = 11\cdot0$, $\sigma_m = 1\cdot38$
Teachers' marks· $M = 62\cdot0$, $\sigma = 8\cdot2$, $\sigma_m = 1\cdot03$

TABLE XXVII

French

Showing Teachers' marks in Higher French for Leaving Certificate and degree marks in Ordinary French.

Teachers' Marks \ Degree Marks	20–24	25–29	30–34	35–39	40–44	45–49	50–54	55–59	60–64	65–69	70–74	75–79	80–84	85–89	90–94	Totals
80–84								1		2	2	1	1	1		3
75–79						1	1	3	1	2	1	3	6	1		19
70–74				1		3	3	5	2	2	3	1	2			22
65–69					2	2	5	4	4	7	2	2				28
60–64		1	1	2	4	1	6	6	8	6	2	1	1			39
55–59	1	1	2	2	2	3	8	2	2		2					25
50–54						1										1
45–49					1	1										2
40–44					1											1
35–39																
Totals	1	2	3	5	10	12	23	21	17	19	12	12	11	2	1	151

$r = 59$

$PE_r = 036$

Degree marks $M = 59\,7$, $\sigma = 14\,0$, $\sigma_m = 1\,14$

Teachers' marks $M = 62\,0$, $\sigma = 8\,6$, $\sigma_m = 0\,70$

IV (*c*)

Department's Marks and Class Marks

TABLE XXVIII (a)

English

Showing mean, standard deviation, etc, of Department's marks in Leaving Certificate for English and University class examination marks in Ordinary English

		Frequency	Mean Mark	Standard Deviation	Standard Error of Mean
Class Marks	Men and Women	158	56·1	7·8	·6
	Men	55	58·1	8·1	1·1
	Women	103	54·9	7·3	·7
Department's Marks	Men and Women	158	61·4	7·6	·6
	Men	55	62·1	8·1	1·1
	Women	103	61·0	7·2	·7

TABLE XXVIII (β)

English

Showing Department's marks in Leaving Certificate for English and University class examination marks in Ordinary English

Department's Marks	Class Marks: 36–39	40–43	44–47	48–51	52–55	56–59	60–63	64–67	68–71	72–75	76–79	80–83	84–87	Totals
84–87														
80–83							1		1					2
76–79				2	1	1		1	1	1				7
72–75					1	1	3	3						8
68–71			1	3	1	2	1	1	5	1				15
64–67			1	3	7	7	5	5		2				30
60–63			1	3	6	4	3	2	1	1				21
56–59	2	1	3	5	9	8	5	1						34
52–55	2	2	3	6	12	2	3	1						31
48–51		1	1	2	3	2	1							10
Totals	4	4	10	24	40	27	22	14	8	5				158

$r = .46$

$PE_r = .042$

TABLE XXIX (*a*)

MATHEMATICS

Showing mean, standard deviation, etc., of Department's marks in Leaving Certificate for Higher Mathematics and University class examination marks in Ordinary Mathematics.

	Frequency	Mean Mark	Standard Deviation	Standard Error of Mean
Class Marks . .	158	45·9	16·9	1·4
Department's Marks	158	64·5	13·0	1·0

TABLE XXIX (β)

Mathematics

Showing Department's marks in Leaving Certificate for Higher Mathematics and University class examination marks in Mathematics (Ordinary Arts and Science).

Class Marks

Department's Marks	10–14	15–19	20–24	25–29	30–34	35–39	40–44	45–49	50–54	55–59	60–64	65–69	70–74	75–79	80–84	85–89	90–94	95–99	Totals
95–99																		1	1
90–94						1	1						1						3
85–89										1	2							1	4
80–84				1	2	1	2		2			3	1	1					13
75–79				1	1		2	2	1	1	2			1	1				12
70–74		3			2	4		2	3	2	3		1	1			1		22
65–69		1		3	1	1	4	3	5	3	2	2	2	1					28
60–64		1	1	2	5	2	1	2	1	1	2	1							19
55–59	1		1		5	3	3	2	1	2	3								21
50–54		3		4	3	1	2	4	2	1	1		1						22
45–49					1		1		1										3
40–44			1			1	1	1											4
35–39					1				1										2
30–34			1			1		1											3
25–29																			0
20–24				1															1
Totals	1	8	4	12	21	15	17	17	17	11	15	6	6	4	1		1	2	158

$r = 37$
$PE_r = \cdot 046$

TABLE XXX (a)

Latin

Showing mean, standard deviation, etc, of Department's marks in Leaving Certificate for Higher Latin and of University class examination marks in Ordinary Latin

		Frequency	Mean Mark	Standard Deviation	Standard Error of Mean
Class Marks	Men and Women	87	60 6	11·9	1·3
	Men	41	60 9	11 2	1·8
	Women	46	60 3	12·2	1 8
Department's Marks	Men and Women	87	60 4	10·4	1·1
	Men	41	61 5	10·1	1·5
	Women	46	59 4	10 6	1·6

TABLE XXX (β)

Latin

Showing Department's marks in Leaving Certificate in Higher Latin and University class examination marks in Ordinary Latin.

Class Marks

Department's Marks	25–29	30–34	35–39	40–44	45–49	50–54	55–59	60–64	65–69	70–74	75–79	80–84	85–89	90–94	Totals
90–94							1								1
85–89															
80–84									2	1					3
75–79							1		1	1		1			4
70–74							1		4		2	2		1	10
65–69						2	1	2	4						9
60–64					2	1	4	2	2	1	1				13
55–59			1	1	4	1	3	7		3	1				21
50–54	1			1	1	6	2	1	5	1	1	1			20
45–49			1												1
40–44		1		1			1								3
35–39						1									1
30–34						1									1
Totals	1	1	2	3	7	12	14	12	18	7	5	4		1	87

$r = \cdot 44$

$PE_r = 058$

TABLE XXXI (a)

French

Showing mean, standard deviation, etc., of Department's marks in Leaving Certificate for Higher French and University class examination marks in Ordinary French

		Frequency	Mean Mark	Standard Deviation	Standard Error of Mean
Class Marks	Men and Women	158	57 8	11 6	·9
	Men	43	58 1	11·9	1·8
	Women	115	57 7	11·5	1 1
Department's Marks	Men and Women	158	60·2	9 2	·7
	Men	43	58 9	10 0	1·5
	Women	115	60 7	8·7	·8

TABLE XXXI (β)

French

Showing Department's marks in Leaving Certificate in Higher French and University class examination marks in Ordinary French

Class Marks

Department's Marks	20–24	25–29	30–34	35–39	40–44	45–49	50–54	55–59	60–64	65–69	70–74	75–79	80–84	85–89	90–94	95–99	Totals
85–89																	
80–84																	
75–79									1	1		2					4
70–74							3	4	6	7	3	3	1				27
65–69							2	4	4	5	3	3			1	1	23
60–64				1	1	4	9	4	7	3	1	2					32
55–59			1	2		6	7	8	2	1			2				29
50–54				1	5	4	6	7	2	1		1					27
45–49				2			1	1	1								5
40–44			1	1	1	4			1								8
35–39				1		1	1										3
30–34																	
Totals			2	8	7	19	29	28	24	18	7	11	3		1	1	158

$r = 53$
$PE_r = 038$

IV (*d*)

Teachers' Marks and Class Marks

TABLE XXXII (a)

English

Showing mean, standard deviation, etc., of Teachers' marks in Leaving Certificate for English and University class examination marks in Ordinary English

		Frequency	Mean Mark	Standard Deviation	Standard Error of Mean
Class Marks	Men and Women	158	56·1	7·8	·6
	Men	55	58 1	8·1	1·1
	Women	103	54 9	7 3	7
Teachers' Marks	Men and Women	158	62·9	7 8	6
	Men	55	64 0	8·1	1 1
	Women	103	62·3	7·5	·7

TABLE XXXII (β)

English

Showing Teachers' marks in Leaving Certificate for English and University class examination marks in Ordinary English.

Class Marks

Teachers' Marks	36–39	40–43	44–47	48–51	52–55	56–59	60–63	64–67	68–71	72–75	Totals
84–87										1	1
80–83							2				2
76–79				1		2	2		2	1	8
72–75				1	3		1	5	3	1	14
68–71			1	1	4	3	1	3	1		14
64–67				2	10	11	3	3		1	30
60–63	2		2	5	12	2	9	1	2		35
56–59	1		4	7	5	4	2	2			25
52–55		2	2	3	6	3	1		1	1	19
48–51	1	1	1	4		2					9
44–47		1									1
Totals	4	4	10	24	40	27	21	14	9	5	158

$r = 50$

$PE_r = 04$

TABLE XXXIII (a)

Mathematics

Showing distribution of marks in University class examination in Ordinary Mathematics

Class Marks	Men and Women				Men				Women			
	Pass	Fail	Exempt	Non-Exempt	Pass	Fail	Exempt	Non-Exempt	Pass	Fail	Exempt	Non-Exempt
95–99			2				2					
90–94			1				1					
85–89			1								1	
80–84			2				1				1	
75–79			5				1				4	
70–74			6				3				3	
65–69			8				5				3	
60–64			16				6				10	
55–59			14				7				7	
50–54			17				7				10	
45–49	4		15	4	1		6	1	3		9	3
40–44	7		11	7	4		7	4	3		4	3
35–39	14	4	1	18	7	3	1	10	7	1		8
30–34	17	6		23	9	3		12	8	3		11
25–29	8	5		13	6			6	2	5		7
20–24	5			5	4			4	1			1
15–19	4	6		10	3	4		7	1	2		3
10–14		1		1						1		1
5–9												
0–4												
Mean	32·8	26·8	58·3	30·1	31·3	27 5	58·4	30 4	35 0	26·2	58 2	32·1
	Mean for all = 45 6				Mean for all = 44 9				Mean for all = 47·3			

TABLE XXXIII (β)

Mathematics

Showing Teachers' marks for Leaving Certificate in Higher Mathematics and University class examination marks in Ordinary Mathematics.

Class Marks

Teachers' Marks	10–14	15–19	20–24	25–29	30–34	35–39	40–44	45–49	50–54	55–59	60–64	65–69	70–74	75–79	80–84	85–89	90–94	95–99	Totals
90–94																		1	1
85–89							1			1	1	1							4
80–84				1	1						2		1						5
75–79					1			3	1	1	1						1	1	9
70–74		1			2	4	2	3	3	1	1	1	1	2	1				22
65–69			1	1	2	3	4	3	3					2					19
60–64		3	1	3	4	2	2	1	2	4	2	2	4						30
55–59	1	3	2	1	4	4	4	1	3	2	4	1							30
50–54		1		5	7	2	3	4	3	1	3								29
45–49																			
Totals	1	8	4	11	21	15	16	15	15	10	14	5	6	4	1		1	2	149

$r = \cdot 34$
$PE_r = \cdot 049$

University class marks M = 45 6; $\sigma = 17\ 2$, $\sigma_m = 1\ 4$
Teachers' marks· M = 63 6, $\sigma = 9\ 5$, $\sigma_m = 0\ 8$

TABLE XXXIV (α)

Latin

Showing mean, standard deviation, etc , of Teachers' marks for Leaving Certificate in Higher Latin and University class examination marks in Ordinary Latin

		Frequency	Mean Mark	Standard Deviation	Standard Error of Mean
Class Marks	Men and Women	64	60 6	12·4	1·6
	Men	34	61 0	10 6	1 8
	Women	30	60 2	14·1	2·6
Teachers' Marks	Men and Women	64	61·5	8·4	1·0
	Men	34	62·7	8·5	1·5
	Women	30	60·0	7·8	1·4

TABLE XXXIV (β)

Latin

Showing Teachers' marks for Higher Latin at Leaving Certificate examination and University class examination marks in Ordinary Latin

Class Marks

Teachers' Marks	25–29	30–34	35–39	40–44	45–49	50–54	55–59	60–64	65–69	70–74	75–79	80–84	85–89	90–94	Totals
85–89										1					1
80–84															
75–79							1		1	1					3
70–74						2		1	2		1	1			7
65–69			1		2	1	3		2	2	1				12
60–64					1	1	1	2	2	1	2	2		1	13
55–59				1	3		3	2	1						10
50–54	1		1	1		3	3	3	4	1					17
45–49				1											1
40–44															
Totals	1		2	3	6	7	11	8	12	6	4	3		1	64

$r = .30$
$PE_r = .077$

TABLE XXXV (a)

French

Showing mean, standard deviation, etc., of Teachers' marks for Leavin Certificate in Higher French and University class examinatio marks in Ordinary French

		Frequency	Mean Mark	Standard Deviation	Standard Error of Mean
Class Marks	Men and Women	151	58 2	11·8	1·0
	Men	42	58·1	12·1	1 9
	Women	109	58·3	11·9	1 1
Teachers' Marks	Men and Women	151	62·0	8·6	·7
	Men	42	59 5	8·1	1·3
	Women	109	62·2	8·7	·8

TABLE XXXV (β)

French

Showing Teachers' marks for Leaving Certificate in Higher French and University class examination marks in Ordinary French.

Class Marks

Teachers' Marks	20–24	25–29	30–34	35–39	40–44	45–49	50–54	55–59	60–64	65–69	70–74	75–79	80–84	85–89	90–94	95–99	Totals
85–89																	
80–84											2	1					3
75–79							2		2	3	1	1	1		1		11
70–74							1	4	6	1	1	5				1	19
65–69				1		1	6	3	3	4	2	1			1		22
60–64				2	1	2	5	5	7	4	1		1				28
55–59			1	1	2	6	8	7	6	5		2	1				39
50–54				3	3	8	4	5	1	1							25
45–49								1									1
40–44				1	1												2
35–39				1													1
30–34																	
Totals			1	9	7	17	26	25	25	18	7	10	3		2	1	151

$r = .58$
$PE_r = .036$

30531

IV (*e*)

Summary of Means, Correlations, etc.

TABLE XXXVI

Summary of frequencies, means, standard deviations, and standard errors of the mean for English, Mathematics, Latin, and French

(Men and Women)

	English				Mathematics				Latin				French			
	n	M	σ	σ_m	n	M	σ	σ_m	n	M	σ	σ_m	n	M	σ	σ_m
Teacher's Mark	158	62 9	7·8	62	69	62 1	9 8	1 18	64	62 0	8·2	1 03	151	62 0	8 6	0·70
					149	63 6	9 5	78	64	61 5	8 4	1 04	151	62·0	8 6	0·70
Department's Mark	158	61·4	7 6	·60	72	61·4	13 0	1 53	87	61 1	10 5	1 12	158	60 2	9 2	0·73
					158	64·5	13 0	1 04	87	60 4	10·4	1·12	158	60·2	9·2	0·73
Degree Mark	216	57 5	9 1	62	81	54 5	18 9	2 10	151	59 9	13 6	1 11	215	55·9	15 1	1·03
					69	55 3	19 1	2 29	64	67 0	11 0	1 38	151	59 7	14·0	1 14
					72	54 8	19 4	2 28	87	60 0	10·9	1 17	158	59 0	14·3	1·14
University Class Mark	216	55·3	7·9	54	81	31 1	8 1	·90	151	56 0	13 1	1·06	215	55·3	13 1	·89
	158	56 1	7 8	·62	149	45 6	17 2	1 41	64	60 6	12 4	1·55	151	58·2	11 8	1·00
	158	56·0	7 7	60	158	45·9	16 9	1 35	87	60 6	11 9	1 27	158	57·8	11·6	·90

Differences between frequencies, means, etc., in the same subject and in the same examination are due to the fact that the groups of students are different; for example, the 69 in the top row in the Mathematics column are students who were not exempted from the degree examination, while the 149 in the next row include also those who were exempted.

TABLE XXXVII

Summary table showing correlation coefficients (with probable errors) of marks in English, Mathematics, Latin, and French.

Correlations	English			Mathematics			Latin			French		
	n	r	PE_r	n	r	PE_r	n	r	PE_r	n	r	PE_r
Teacher's Mark and Department's Mark	332	·52	03	264	58	03	218	37	·04	263	60	·08
Degree Mark and University Class Mark	216	57	·03	*81	51	06	151	75	02	215	76	02
Teachers' Mark and Degree Mark	153	42	05	*69	08	·08	64	53	06	151	·59	·04
Department's Mark and Degree Mark	154	36	·05	*72	30	·07	87	59	·05	158	·59	·04
Teacher's Mark and University Class Mark	158	50	04	149	34	05	64	30	08	151	58	·04
Department's Mark and University Class Mark	158	46	04	158	37	05	87	44	06	158	53	·04

* These frequencies are small owing to the fact that a considerable number of students gained exemption from the degree examinations

Analysis of the first of these summaries shows that on the whole the mean marks in English, Mathematics, and French decrease in the following order: (1) Teacher's Mark, (2) Department's Mark, (3) Degree Mark, (4) University Class Mark. There is not much difference between (1) and (2), nor between (3) and (4), except in Mathematics, where the gap is so considerable as to suggest that the basis of marking employed for University class examinations in Mathematics is different from that employed in the other subjects. The gap between (2) and (3), however, is considerable, except in Latin.

Again, except in English, the "scatter" of the University marks is larger than the "scatter" of the school marks, whether as given by the teachers or by the Department. This is in accordance with what is generally found when mental and

scholastic tests are given to school children—scatter usually increases with age.

These tables show a significant difference between the means of the men and women in only two cases, namely, in the University degree examination in Latin and the University class examination in English, and in each case the mean of the men is higher.

In an attempt to estimate the predictive value of teachers' and Department's marks, the Summary of Correlations is specially important. As might be expected, the correlations between teacher's mark and Department's mark on the one hand, and between degree mark and University class mark on the other, are higher than the correlations between either of the former pair and either of the latter, with one exception: in Latin the correlation between teacher's mark and Department's mark is lower than that between Department's mark and University class mark.

There is no significant difference between the prognostic value of teachers' marks and that of the Department's marks for success either in the University class examinations or in the degree examinations; the slight differences that appear in the table are not statistically significant. Another striking fact is the smallness of some of the correlation coefficients in Mathematics, English, and Latin; the coefficient in degree Mathematics was influenced by the fact that students who have reached a good standard in class examinations are exempted from the degree examination. All the correlations have indeed been affected by the fact that the data refer only to the pupils who were successful at the Leaving Certificate examination. In considering the value of the teacher's estimate one has to bear in mind that it can hardly fail to have been influenced by his experience of the objective standard of the Leaving Certificate examination.

V

RELATION BETWEEN LEAVING CERTIFICATE MARKS IN INDIVIDUAL SUBJECTS AND UNIVERSITY SUCCESS IN THESE AND OTHER SUBJECTS

In the preceding section teachers' marks and Leaving Certificate marks in certain subjects were compared with degree marks and University class marks in the same subjects. In this section an attempt will be made to ascertain more definitely the predictive value of the Leaving Certificate mark in a particular subject by comparing it with the subsequent performance of the student both in that subject and in others.

Tables XXXVIII–XLIV show the mean Leaving Certificate marks in English, Mathematics, Latin, Greek, French, German, and Science obtained by those who

(1) Took Honours in other subjects;
(2) Proceeded to Honours in the subject at the University;
(3) Took a double course in it;
(4) Passed in it for the Ordinary degree;
(5) Failed in it for the Ordinary degree;
(6) Did not take it at the University.

The inferences to be drawn from each table are summarised after the table, and some points of special interest are noted at the end of the section.

TABLE XXXVIII

Showing mean, standard deviation, etc., of Leaving Certificate mark in English of students in various types of University courses.

Mean Leaving Certificate (Higher) mark in English for all = 60·62

		Passes		Passes		Failures	
		Honours Course in Subjects other than English	Honours Course in English	2nd Course in English [1]	1st Ordinary Course in English	1st Ordinary Course in English	Non-English [2]
Men and Women	M	63 75	67 50	63 64	60 19	54 90	59·68
	σ	8 26	6 18	7 25	7 25	5·79	9 64
	σ_m	1 10	1 21	0 95	0 85	1 93	0·70
	n	56	27	58	73	10	188
Men	M	63 26	66 00	61 44	61 55	53 33	59 39
	σ	8 82	5 92	7 59	8 71		7 99
	σ_m	1 99	1 53	1 96	1 69		0 76
	n	39	16	10	20	3	109
Women	M	64 89	69 82	64 48	59 68	55 57	60·09
	σ	6 66	5·96	6·83	6 42	6 51	8 28
	σ_m	1 67	1·88	1 05	0 90	2 7	0 93
	n	17	11	42	53	7	79

M = mean. σ = standard deviation
σ_m = standard error of the mean n = frequency

[1] Intermediate Honours English students

[2] Those who did not take English in their University course The numbers in this column are large, because English is compulsory for the Leaving Certificate but not for the M.A., and has no place in the B Sc. course

The highest average mark is that of the English Honours graduates; next come those who took Honours in other subjects; then those who passed a second course in English; then those who passed First Ordinary English and those who took no English at the University; those who failed in English come last.

This is what one would expect. It should be noted, however, that though Honours graduates in English have a higher average Leaving Certificate mark in English than Honours graduates in other subjects taken collectively, they are surpassed (see Table LII) by the students who took Honours in Modern Languages. It might be too much to say that some students attempt Honours

in English not because they have a special bent for English, but because they have no special bent for any other subject; but it is clear that some of those who do best in English at school proceed to Honours in other subjects at the University.

The averages of the women are a little higher than those of the men, except in the group that passed in First Ordinary English, but the differences are not statistically significant.

TABLE XXXIX

Showing mean, standard deviation, etc, in Mathematics.

Mean Leaving Certificate (Higher) mark in Mathematics for all = 63·44

		Passes		Passes		Failures	
		Honours Course in Subjects other than Mathematics	Honours Course in Mathematics	2nd Course in Mathematics	1st Ordinary Course in Mathematics	1st Ordinary Course in Mathematics	Non-Mathematics
Men and Women	M	64 18	72 16	63 09	67 35	66·00	60·97
	σ	8 57	13 02	13 07	11 76	.	11·04
	σ_m	1 01	3 82	1 50	1 51	.	1 01
	n	60	13	83	61	3	115
Men	M	64 28	72 13	63 91	67·42	70·00	62·15
	σ	10 50	14 17	13 60	11 75		11 56
	σ_m	1 60	5 36	2 24	2 11		1·48
	n	43	8	37	31	2	61
Women	M	63 04	72 20	62 43	67·27	58·00	50·63
	σ	12 52	11 58	13 70	11 78		11·03
	σ_m	3·13	5·79	2·02	2 15		1 50
	n	17	5	46	30	1	54

Much the highest average in Mathematics is that of the Honours graduates in Mathematics; then come (in order) those who passed in First Ordinary Mathematics, those who failed in First Ordinary, those who took Honours in other subjects, those who took the Second Course, lastly those who took no Mathematics at the University. In both English and Mathematics the mean of those who dropped the subject in proceeding to the University

is below the mean of the rest, in Mathematics significantly so. The superiority in point of mean Leaving Certificate mark of those who took the First Ordinary Course over those who took the Second is also noteworthy.

There is no significant difference between the means of the men and of the women.

TABLE XI.

Showing mean, standard deviation, etc, in Latin.

Mean Leaving Certificate (Higher) mark in Latin for all = 62·17

		Passes		Passes		Failures	
		Honours Course in Subjects other than Classics	Honours Course in Latin	2nd Course in Latin	1st Ordinary Course in Latin	1st Ordinary Course in Latin	Non-Latin
Men and Women	M	65 05	64·00	61 68	61 98		61 85
	σ	9·22	11 24	7 95	9 72		9 21
	σ_m	1 50	4 25	1 73	1 39		1·26
	n	37	8	22	49		53
Men	M	66·28	60 33	62 22	64 72	.	61 41
	σ	9 18	10 69	8 20	9 64		10·06
	σ_m	1·96	4 32	2 90	1 97		2·07
	n	23	6	9	25		27
Women	M	63 07	75·00	61 31	59 13		62·31
	σ	8 85	.	7 72	8 95		7·50
	σ_m	2·46		2 23	1 87		1·50
	n	14	2	13	24		26

This table presents some singular features. The average Leaving Certificate mark of the two women who took Honours in Latin is far superior to that of the Honours men, which indeed is lower than that of any other group of men in the table, lower even than the average of those who took no Latin at the University. The average of the men who took First Ordinary Latin is higher than that of those who took the Second Course. The highest average among the men belongs to those who took Honours in other

subjects. It is evident that the men who took Honours in Latin did not do so because of their initial superiority in the subject—see also Table LII, and remarks thereon. There are no failures; if the Leaving Certificate marks are a guide, those who dropped Latin at the University would have passed if they had proceeded with it. The frequencies, however, and the differences between the means are so small that there is only one difference that is statistically significant, namely, that between the means of the men and women who took the First Ordinary Course

TABLE XLI

Showing mean mark in Greek

Mean Leaving Certificate (Higher) mark in Greek for all = 65·96

		Passes		Passes		Failures	Non-Greek
		Honours Course in Subjects other than Classics	Honours Course in Greek	2nd Course in Greek	1st Ordinary Course in Greek	1st Ordinary Course in Greek	
Men and Women	M	59 67	72 40	67 20	71 00		58·63
	n	3	5	5	10		8
Men	M	59·67	71·00	63 50	71·38		58 33
	n	3	4	2	8		6
Women	M		78 00	69 67	69 50		59 50
	n		1	3	2		2

The numbers in Greek are so small that only the means have been calculated. Those who took Honours in Greek have the highest Leaving Certificate average, but it is very little higher than that of those who took only the First Ordinary Course, and who might well (it seems) have gained Honours if they had carried on their Greek. Again, the First Ordinary students show a higher Leaving Certificate mean than the Second Ordinary. There are no failures.

The one woman who took Honours was much above the Leaving Certificate average of the men.

TABLE XLII

Showing mean, standard deviation, etc., in French.

Mean Leaving Certificate (Higher) mark in French for all = 59·72

		Passes		Passes		Failures	
		Honours Course in Subjects other than French	Honours Course in French	2nd Course in French	1st Ordinary Course in French	1st Ordinary Course in French	Non-French
Men and Women	M	62 11	64 78	62 58	57 25	50 12	59·18
	σ	8 67	9 69	8·43	15 91	8 62	12 20
	σ_m	1 09	3 33	0 94	2 07	3 26	1 09
	n	63	9	80	59	8	125
Men	M	59 66	66·80	66 56	55 24	45 00	58 58
	σ	9·05	2·99	6·03	9 03	.	12 72
	σ_m	1 45	1 49	2 45	2 02		1 38
	n	39	5	9	21	2	85
Women	M	66 08	62 25	62 08	58 36	51·83	60 45
	σ	8 03		8 60	18 66	9·34	11 00
	σ_m	1·68	.	1 02	3 03	4·17	1 74
	n	24	4	71	38	6	40

The mean Leaving Certificate marks in French follow nearly the same order as in English, though the superiority of those who took Honours in French over those who took Honours in other subjects or the Second Course in French is less marked. There is one striking difference, however, between the men and the women: the mean Leaving Certificate mark of the men who took Honours in French is considerably higher than that of those who took Honours in other subjects; with the women the reverse is the case. Apparently many girls who have done very well in French at school drop it when they go to the University.

TABLE XLIII

Showing mean, standard deviation, etc., in German.

Mean Leaving Certificate (Higher) mark in German for all = 64·81

		Passes		Passes		Failures	
		Honours Course in Subjects other than German	Honours Course in German	2nd Course in German	1st Ordinary Course in German	1st Ordinary Course in German	Non-German
Men and Women	M	63 09	71 2	64 69	66 0		60·27
	σ	12 40	9 61	7 44	12 15		7 03
	σ_m	3 94	4·85	1 58	6 07		2 22
	n	11	5	23	5		11

The mean Leaving Certificate mark of those who took Honours in German is higher than that of any of the other groups. Once more the First Ordinary students show a higher mean than the Second Ordinary. There were no failures, but the Leaving Certificate mean of those who dropped German was definitely below that of those who pursued it.

The numbers in German are small, and the marks of men and women have not been entered separately in the table.

TABLE XLIV

Showing mean, standard deviation, etc , in Science.

Mean Leaving Certificate (Higher) mark in Science for all = 60·57

		Passes		Passes		Failures	
		Honours Course in Subjects other than Science	Honours Course in Science	2nd Course in Science	1st Ordinary Course in Science	1st Ordinary Course in Science	Non-Science
Men and Women	M	64 18	67 51	60 24	54 38	56 5	61 86
	σ	9·15	12·41	8·09	12 56		9·29
	σ_m	2 88	2 58	1 42	2 37		1 79
	n	11	24	33	29	2	28
Men	M	63 10	68·12	60 14	53 0	63	61 1
	σ	9 60	13·40	8 34	8 12		9 45
	σ_m	3 20	3 25	1 60	2 16	.	2 11
	n	10	18	28	15	1	21
Women	M	75	65 67	60 8	55 86	50	64 14
	σ		8·76	6 52	10·03	.	8 79
	σ_m		3 82	3 21	4 04		3 59
	n	1	6	5	14	1	7

The mean Leaving Certificate marks of men and women taken together decrease in this order: Honours Science, Honours in other subjects, Non-Science, Second Course in Science, Fail, First Course in Science. The failures are so few that little importance can be attached to their mean mark; but the high average of those who dropped Science on going to the University is noteworthy, especially in contrast with Mathematics.

There is no significant difference between the means of men and women.

To sum up. Except in Latin, the mean Leaving Certificate mark gained in a subject by students who took Honours in that subject was higher than the mean of any of the other groups shown in the tables.

Except in Mathematics, German, and Greek the mean Leaving Certificate mark of those who graduated with Honours in some other subject was very near that of those who took Honours in the subject.

On the whole, those who failed in the degree examination had a poor average at the Leaving Certificate examination.

There were no failures in Latin, Greek, or German among the cases investigated.

The most singular feature in all these tables is the low average Leaving Certificate mark in Latin of the *men* who took Honours in that subject This is not the only singularity that the Classics Honours group presents (see pp. 108–9). The apparent anomaly that in Mathematics, Latin, Greek, and German the mean Leaving Certificate mark of those who passed in the First Ordinary Course is higher than that of those who passed in the Second Ordinary is explained by the fact that the First Ordinary Course includes prospective Honours students who do not take the Second Ordinary Course but proceed direct to the Intermediate Honours or Honours Course

The percentages of students who included subjects in their Leaving Certificate which they did not prosecute further at the University are as follows:—

English	46
French	36
Mathematics	34
Latin	31
Greek	26
Science	22
German	20

VI

FURTHER ANALYSIS OF RELATION BETWEEN LEAVING CERTIFICATE MARKS IN INDIVIDUAL SUBJECTS AND UNIVERSITY SUCCESS IN THESE AND OTHER SUBJECTS

THE analysis begun in the preceding section is carried further in the following tables (XLV–LI), which show the frequency, mean, and standard deviation of the Leaving Certificate marks obtained by students in the following groups:—

A. Honours M.A., graduated.
B. Ordinary M.A., „
C. „ M.A., not yet graduated.
D. Honours M.A., „ „
E „ B.Sc., graduated.
F. Ordinary „ „
G. B.Sc., not yet graduated
H. LL.B. „ „

These tables also take account of the different classes of Honours and of the number of "attempts" in Ordinary degree examinations.

A general summary of the results in individual subjects follows Table LI (β).

TABLE XLV (α)

English (Men)

	A Group Hons M.A Graduates			*B Group* Ordinary M A Graduates			*C Group* Ordinary M.A not completed			*D Group* Hons M A , not completed		*E Group* Hons B Sc Graduates			*F Group* Ordinary B Sc Graduates		*G Group* Ordinary B.Sc , not completed			*H Group* LL.B., not completed	
	n	Mean	σ	*n*	Mean	σ	*n*	Mean	σ	*n*	Mean	*n*	Mean	σ	*n*	Mean	*n*	Mean	σ	*n*	Mean
Non-English [1] .	20	65 50	9 72	28	57 00	6 34	26	58 46	7 17	5	59 40	13	60 00	6·86	2	51 50	13	56 69	6 50	2	65 00
Ordinary English [2] 1st attempt [3]	22	65 14	6 38	17	61 00	7 12	4	63 75		2	59 50										
Ordinary English [2] 2nd " .				2	54 00		4	62 00													
Ordinary English [2] Failed .				1	50·00		1	54 00		1	56 00										
Totals . .	22	65 14	6·38	20	59 75	7 52	9	61 89	10 14	3	58 33										
English [2] (2nd Course) 1st attempt	1	54	.	11	63 27	7 69															
English [2] (2nd Course) 2nd " .	1	60		1	53 00		1	59 00													
English [2] (2nd Course) Failed .				1	54 00																
Totals . .	2	57	.	13	61 77	7 80	1	59 00													
Inter.[4] Eng Language 1st attempt	14	66 00	5·90							2	59 50										
Inter.[4] Eng Language 2nd " .	1	72·00																			
Totals . .	15	66 40	5 90							2	59 50										
Honours—																					
1st Class . .	5	70·20	1 72																		
2nd " . .	10	64·50	6·21																		
3rd " . . .	1	60 00																			
Total . . .	16																				

[1] Those who did not take English in their University course
[2] Second Course.
[3] First Ordinary course
[4] Intermediate Honours
[5] *1st attempt* means passed at first attempt.

TABLE XLV (β)

English (Women)

	A Group Hons M A Graduates			B Group Ordinary M A Graduates			C Group Ordinary M A, not completed			D Group Hons. M A, not completed		E Group Hons. B Sc Graduates		F Group Ordinary B.Sc. Graduates		G Group Ordinary B Sc, not completed	
	n	Mean	σ	*n*	Mean	σ	*n*	Mean	σ	*n*	Mean	*n*	Mean	*n*	Mean	*n*	Mean
Non-English	14	65 57	6·04	38	59 32	6 83	20	59 25	9·74	2	65 50	1	50 00	2	57 00	2	47·50
Ordinary English — 1st attempt	13	69 46	5 56	65	60 72	6·21	6	66 83		1	65 00						
Ordinary English — 2nd ,,				8	55 13	3 30				1	62 00						
Ordinary English — 3rd ,,							1	61 00									
Ordinary English — 4th ,,				1	56·00												
Ordinary English — Failed				2	53 00		5	56 60									
Ordinary English (Composition)	13	69 46	5 56	76	59 87	6 17	12	62 08	8·99	2	63 50						
English (2nd Course) — 1st attempt	10	70·00	6 23	24	62 75	5 36	2	70 50									
English (2nd Course) — 2nd ,,				3	61 00		1	57 00									
English (2nd Course) — 3rd ,,				1	69·00												
English (2nd Course) — 4th ,,				1	52 00												
English (2nd Course) — Failed				1	55 00		1	61 00									
English (2nd Course) Composition	10	70 00	6 23	30	62 17	5 93	4	64 75									
Inter. English Language — 1st attempt	10	70·20	6·13														
Inter. English Language — 2nd ,,	1	66 00															
Inter. English Language (Composition)	11	69·82	5 88														
Honours— 1st Class	2	73·00															
Honours— 2nd ,,	7	70·29	6 23														
Honours— 3rd ,,	2	65·00															
Honours— Total	11																

TABLE XLVI (α)

Mathematics (Men)

	A Group			*B Group*			*C Group*			*D Group*		*E Group*			*F Group*	*G Group*			*H Group*	
	n	Mean	σ	*n*	Mean	σ	*n*	Mean	σ	*n*	Mean	*n*	Mean	σ	*n*	Mean	*n*	Mean	σ	*n*	Mean
Non-Mathematics	28	62·00	9 44	11	57 73	11 60	15	67 53	13 30	4	62 75				1	52 00	1	39 00		1	65·00
Ordinary Mathematics—																					
1st attempt	9	72 22	13 41	26	62 93	10 68	10	69 20	15 46	4	72 00	12	67 42	12 17	1	53 00	10	67 00	10·90	1	87·00
2nd ,,				2	43 00		1	62 00				1	72 00				1	52 00			
Failed							1	71 00													
Totals	9	72·22	13 41	28	61 50	11 84	12	68 75	14 27	4	72 00	13	67 77	11 76	1	53 00	12	65·92	16·83	1	87·00
Mathematics (2nd Course)—																					
1st attempt	9	72 22	13 41	20	62·00	14 47	3	63 33		3	75 33	3	76·33							1	87·00
2nd ,,				4	56 50																
3rd ,,																	1	50·00			
4th ,,							1	44·00													
Failed																	2	63·00			
Totals	9	72 22	13·41	24	61·04	12 06	4	58 50		3	75 33	3	76 33				3	58·67		1	87·00
Honours—																					
1st Class	1	98·00																			
2nd ,,	6	68·50																			
Total	8[1]	72·13																			

[1] One student was awarded Honours but no class was shown

TABLE XLVI (β)

Mathematics (Women)

	A Group[1]			*B Group*			*C Group*			*D Group*		*E Group*		*F Group*			*G Group*	
	n	Mean	σ	*n*	Mean	σ	*n*	Mean	σ	*n*	Mean	*n*	Mean	*n*	Mean	σ	*n*	Mean
Non-Mathematics	15	62 80	12 92	25	54 64	7 02	9	61 89	9 34	3	77 33	1	63 00				1	60·00
1st attempt	6	73 83		56	65 45	12 56	9	59 78	14 81					1	34·00			
2nd ,, .				5	64 40		2	63 50						1	67 00		1	65·00
3rd ,, .							2	37·00										
Failed							1	58 00										
Totals .	6	73 83		61	65 30	12 53	14	56·93	15 31					2	50·50		1	65 00
2nd Course	5	72 20		28	66 61	13 14	2	61 50										
2nd attempt				12	56·92	12 35	1	55 00										
3rd ,, .				1	57 00		2	44·50										
Failed .							2	42·00										
Totals .	5	72 20		41	63 54	13·52	7	50 14										
Honours—																		
1st Class .	1	71 00																
2nd ,, . .	3	75 00																
3rd ,, . .	1	65·00																
Total . . .	5	72·20																

[1] See p 94.

TABLE XLVII (α)

Latin (Men)

	A Group			*B Group*			*C Group*			*D Group*		*E Group*		*G Group*		*H Group*	
	n	Mean	σ	*n*	Mean	σ	*n*	Mean	σ	*n*	Mean	*n*	Mean	*n*	Mean	*n*	Mean
Non-Latin . .	12	65 5	10 18	3	52 00		6	60 83	10 29			1	64 00	4	58 50	1	52 00
Ordinary Latin .	17	64 71	9 48	17	60 59	7 23	6	68 53	12 48	1	56 00						
Latin (2nd Course)				9	62 22	8·20											
Intermediate Latin	1	59·00															
Honours—																	
1st Class	1	83 00															
2nd ,, .	3	57 00															
3rd ,, . .	2	54 00															

TABLE XLVII (β)

LATIN (Women)

	A Group[1]			*B Group*			*C Group*			*D Group*	
	n	Mean	σ	*n*	Mean	σ	*n*	Mean	σ	*n*	Mean
Non-Latin	9	64 00	6 38	11	61 04	7 01	4	60 25		2	62 50
Ordinary Latin	7	65 20	11 81	25	60 12	7 98	7	61 71	9 69	2	62·20
Latin (2nd Course) { 1st attempt	2	61 50		8	62 00	8 31	2	60 00			
Latin (2nd Course) { 2nd „				1	58 00						
Latin (2nd Course) Comp	2	61 50		9	61 56	7 93	2	60 00			
Intermediate Latin	2	61 50		1	77 00		1	73 00			
Honours— 1st Class	2	75 00									

[1] See p 94

TABLE XLVIII (α)

GREEK (Men)

	A Group		B Group		C Group		D Group		H Group	
	n	Mean	*n*	Mean	*n*	Mean	*n*	Mean	*n*	Mean
Non-Greek	2	60·50	1	67·00	1	63 00	1	64 000	1	35 00
1st Course—										
1st attempt	5	68 4	5	68 8	4	74 00				
2nd Course—										
1st attempt			2	63 5						
Honours—										
1st Class	1	80 00								
2nd ,,	3	68 00								
Total	4	71 00								

TABLE XLVIII (β)

GREEK (Women)

	A Group		B Group		C Group	
	n	Mean	*n*	Mean	*n*	Mean
Non Greek			1	56 00	1	63 00
1st Course—						
1st attempt	1	78 00	3	69 67	2	69 50
2nd Course—						
1st attempt			3	69 67		
Failed					1	65 00
Totals			3	69 67	1	65 00
Honours—						
1st Class	1	78·00				

TABLE XLIX (α)

FRENCH (Men)

	A Group [1]			*B Group*			*C Group*			*D Group*		*E Group*			*F Group*		*G Group*		
	n	Mean	σ	*n*	Mean	σ	*n*	Mean	σ	*n*	Mean	*n*	Mean	σ	*n*	Mean	*n*	Mean	σ
Non-French . .	24	60·29	10 08	16	58 94	9 06	19	55 42	10 47	2	54·0	11	59 55	5 40	2	54 5	11	60·36	7 95
Ordinary—																			
1st attempt .	11	63·45	7 48	16	58 44	5 03	3	69 66		4	59 0								
2nd ,,				2	59 5														
3rd ,,				2	48 5														
Failed .							2 [2]	45 0											
Higher—																			
1st attempt .	6	67·33	3·05	2	70 5					2	66·5								
2nd ,,				2	59 5		2	68·0											
Honours—																			
1st Class .	2	69																	
2nd ,, .	3	65·33																	

[1] See p. 94.

[2] One failed once and one four times.

TABLE XLIX (β)

French (Women)

	A Group			*B Group*			*C Group*			*D Group*		*F Group*	
	n	Mean	σ	*n*	Mean	σ	*n*	Mean	σ	*n*	Mean	*n*	Mean
Non-French	13	65 69	9 47	14	55 07	6 40	12	61 33	13 93			1	57 0
Ordinary—													
1st attempt.	14	66 07	5 73	63	61 62	5 02	0	68 50	3 54	4	72 50		
2nd ,,	1	56·0		17	56 47	3 33	2	54 50					
3rd ,, .				4	51 00								
4th ,, . .				1	52 00		1	44 00					
Failed . . .				1	63 00		5	49 60					
Higher—													
1st attempt . .	8	66 5	6 04	47	61 81	7 53	3	61 66		4	72 50		
2nd ,, . . .				7	56 86	9 73	4	59 75					
3rd ,, . .				2	54 00								
Honours—													
2nd Class . . .	4	62 25											

TABLE L (α)

GERMAN (Men)

	A Group		*B Group*	
	n	Mean	*n*	Mean
Non-German	2	49 5	1	66
Ordinary German—				
1st attempt	3	62 33	2	72
2nd ,,			1	57
Totals	3	62 33	3	67
2nd Course—				
1st attempt	3	62 33	2	72
Honours—				
2nd Class	1	60		
Total	1	60		

TABLE L (β)

GERMAN (Women)

	A Group			*B Group*			*C Group*		*D Group*	
	n	Mean	σ	*n*	Mean	σ	*n*	Mean	*n*	Mean
Non-German	3	61 33		3	57 33		2	70 5		
Ordinary German—										
1st attempt	8			15	64 47	6 67	1	80	2	62·5
2nd ,,				1	50					
Totals	8	72 5	10 26	16	63 56	6·58	1	80	2	62·5
German (2nd Course)—										
1st attempt	6	72·83	10 78	14	64 5	6·02			2	62 5
2nd ,,				1	64					
Totals	6	72 83	10·78	15	64·47	6·67			2	62·5
Honours—										
1st Class	2	81·5								
2nd ,,	2	66·5								
Total	4	74								

TABLE LI (α)

Science (Men)

	A Group[1]			*B Group*			*C Group*			*D Group*		*E Group*			*F Group*		*G Group*		
	n	Mean	σ	*n*	Mean	σ	*n*	Mean	σ	*n*	Mean	*n*	Mean	σ	*n*	Mean	*n*	Mean	σ
Non-Science	10	63 1	9 6				9	60 9	10 29	2	52 0								
Ordinary—																			
1st attempt	8	65 0	12 9	15	54 0	0 5	9	61 0	10 04	1	57 0	13	67 46	13 15	2	50 5	7	64 43	9·84
2nd ,,				1	68 0		2	58 5		1	50 0						3	54 0	
Failed							1	63 0											
Totals	8	65 0	12 9	16	54 88	7 62	12	60 75	9 34	2	53 5	13	67 46	13 15	2	50 5	10	61·3	10·02
Higher—																			
1st attempt	6	68 0	13 5	10	58 40	5 55	2	65·0		2	53 5	13	67 46	13 15	1	50 0	3	72 33	
2nd ,,				1	55 0		2	64 5											
3rd ,,							1	75 0							1	51	4	58 50	
Totals	6	68 0	13 5	11	58·09	5 39	5	66 8		2	53 5	13	67 46	13 15	2	50 5	7	64 0	9·32
Honours—																			
1st Class	1	95 0										4	72 5						
2nd ,,	4	63 5										9	65 22	12 39					
Totals	5	69 8										13	67 47	13 09					

[1] See p 94.

TABLE LI (β)

SCIENCE (Women)

	A Group[1]		*B Group*			*C Group*		*D Group*		*E Group*		*F Group*		*G Group*	
	n	Mean	*n*	Mean	σ	*n*	Mean	*n*	Mean	*n*	Mean	*n*	Mean	*n*	Mean
Non-Science	1	75	2	58 5		3	61 6	1	72						
Ordinary—															
1st attempt	5	68 8	12	54 75	7 22	1	80					1	63	1	70
2nd ,,			1	53		1	51			1	50	1	58	1	54
Failed						1	50								
Totals	5	68·8	13	54 6	7 08	3	60 33			1	50	2	60 5	2	62
Higher—															
1st attempt	5	68 8	3	61						1	50	1	58		
2nd ,,												1	63		
Failed														1	54
Totals	5	68 8	3	61						1	50	2	60·5	1	54
Honours—															
1st Class	1	77													
2nd ,,	4	66 8													
3rd ,,										1	50				
Totals	5	68 8								1	50				

[1] See p. 94

The foregoing tables show that, except in the group of women who graduated with Honours in Mathematics, there is a clear gap, frequently a wide gap, between the Leaving Certificate means of the graduates who gained First Class Honours and those who gained Second Class Honours. The mean Leaving Certificate mark of First Class Honours was always over 70, except in French, where it was 69. The one man who gained a First in Science had a Leaving Certificate mark of 95, and the one man who gained a First in Mathematics had a Leaving Certificate mark of 98! In respect of Leaving Certificate averages, Honours graduates were generally superior to Ordinary graduates, and among the latter those who passed at their first attempt to those who did not. It is interesting to note that the Leaving Certificate means of the students with incomplete degrees compared quite favourably with those of other groups.

There is a noteworthy difference between Honours men and Honours women The mean Leaving Certificate mark of the First Class Honours men was higher than that of the First Class Honours women, except in English, whereas the mean of the Second Class Honours men was lower than that of the Second Class Honours women, except in French. In the case of First Class Honours, however, the numbers are very small. Among the Ordinary graduates there is no significant difference between the averages of men and women

As for particular subjects, it may be noted that in English the Honours B.Sc. and non-English Honours M.A graduates have a higher Leaving Certificate average than the Ordinary M.A , while the Ordinary B Sc. average is about the same as that of the Ordinary M.A. In Latin the mean of the Second and Third Class Honours graduates is distinctly lower than that of the Ordinary M.A s. In French the mean of the Second Class Honours women is lower than that of the women who graduated with Honours in other subjects. In Science the mean Leaving Certificate mark of the men who took Honours in other subjects is practically the same as that of the men who gained Second Class Honours in Science. The mean of the Honours B.Sc. men is nearly the same as that of the Honours M.A.s. The Leaving Certificate marks in Science distinguish clearly between the Honours graduate and the Ordinary graduate, but not between the M.A. and the B.Sc.

VII

LEAVING CERTIFICATE MARK IN VARIOUS SUBJECTS OF STUDENTS WHO TOOK HONOURS AT THE UNIVERSITY IN THE SAME OR OTHER SUBJECTS

TABLE LII shows the mean Leaving Certificate mark in English, Mathematics, Latin, French, and Science of students who took an Honours degree in English, Mathematics, Classics, Modern Languages, History, or Science up to 1932 and up to 1933 respectively.

These are very interesting figures The mathematicians appear to marked advantage; they have the highest Leaving Certificate average not only in their own subject and in Science, but in Latin also. Those who graduated with Honours in Modern Languages naturally head the list in French; they stand second in Mathematics and third in Latin. The graduates with Honours in English appear to less advantage. It is not surprising, perhaps, that the English group have the lowest Leaving Certificate average in Mathematics; but it is surprising that they have also the lowest average in French, except for the B.Sc. students. The Classical Honours graduates are surpassed in Latin by the mathematicians. Are we to infer that a good many able boys—the case seems to be somewhat different with girls—take Latin at school for traditional reasons but specialise in other subjects when they go to college? Other facts already noted seem to point in that direction.

Table LII (β) includes the few additional students who did not graduate till 1933.

TABLE LII (α)

Showing Leaving Certificate mark and Honours degree obtained up to 1932.

University Honours Group	Mean Leaving Certificate Mark in									
	English		Mathematics		Latin		French		Science	
	n	Mark	*n*	Mark	*n*	Mark	*n*	Mark	*n*	Mark
English	28	**67·32**	21	61 62	18	62 00	23	60 87	10	64 09
Mathematics	13	65 08	13	**72·92**	5	70 40	11	63 00	11	67 64
Classics	6	67 50	6	66 00	6	**67·33**	6	65 67	.	.
Modern Languages	11	65 45	6	70 50	8	65 63	11	**68·45**		
History	10	67·80	9	68 11	7	61 71	7	63 00	6	61 00
B Sc	10	57 81	10	68 56	4	50 75	10	61 20	16	**67·19**

TABLE LII (β)

Showing Leaving Certificate mark and Honours degree obtained up to 1933

University Honours Group	Mean Leaving Certificate Mark in									
	English		Mathematics		Latin		French		Science	
	n	Mark	*n*	Mark	*n*	Mark	*n*	Mark	*n*	Mark
English	30	**66·80**	23	61 17	18	62 00	24	60 96	12	63 00
Mathematics	15	64 47	15	**74·47**	7	63 71	12	61 50	12	66 17
Classics	9	65 89	7	66 14	9	**68·56**	8	64 75	.	..
Modern Languages	15	64 87	9	69 07	11	63 45	15	**68·78**	..	
History	11	68 18	10	66 10	7	61 71	7	63 00	6	61 00
B Sc	19	58 42	19	67 89	6	49·33	13	59 54	19	**66·74**

VIII

RELATION BETWEEN LEAVING CERTIFICATE MARKS IN VARIOUS SUBJECTS AND SUCCESS IN PHILOSOPHY AT THE UNIVERSITY

A GREAT many Arts students, both Ordinary and Honours, take Philosophy in their degree course. It should therefore be possible to ascertain with some accuracy how far, if at all, success in school subjects is predictive of success in this purely University subject. Tables LIII (α–δ) show the distribution of the marks obtained at first sitting in the examination for the Ordinary degree in Philosophy as compared with the marks awarded by the Department at the Leaving Certificate examination in English, Mathematics, Latin, and French respectively. In Tables LIV (α–δ) University class marks in Philosophy are correlated with Department's marks in English, Mathematics, Latin, and French.

TABLE LIII (α)

Showing Department's marks in Leaving Certificate for English and University Degree marks in Philosophy (First Ordinary—first sitting).

University Degree Marks in Philosophy

Department's Marks in English	16–19	20–23	24–27	28–31	32–35	36–39	40–43	44–47	48–51	52–55	56–59	60–63	64–67	68–71	72–75	Totals
82–85													1		1	2
78–81								1						1		2
74–77												3	1			4
70–73								1		2	3	1	3	1		11
66–69							1	1	1	1	5	4		1		14
62–65						1		1	1	6	7	4	2	1	1	24
58–61						2		1	3	4	10	8	2	3		33
54–57	1			1	2	5	3	3	3	10	5	1	3	1		38
50–53				1		1	1	3	6	3	2	3	2			22
46–49									4							4
Totals	1	0	0	2	2	9	5	11	18	26	32	24	14	8	2	154

$r = \cdot 38$ $\quad PE_r = \cdot 047$

TABLE LIII (β)

Showing Department's marks in Leaving Certificate (Higher) for Mathematics and University Degree marks in Philosophy (First Ordinary).

University Degree Marks in Philosophy

Department's Marks in Mathematics	17–22	23–28	29–34	35–40	41–46	47–52	53–58	59–64	65–70	71–76	Totals
95–100									1		1
89– 94							1	1			2
83– 88			1	1	1		2	2		1	8
77– 82					2	1	1	3	5	1	13
71– 76					1	5	2	4	2		14
65– 70				1	2	3	6	6	2		20
59– 64				1	1	5	6	2	2	1	18
53– 58	1			1	2	2	6	4	2		18
47– 52			1	1	1	3	9	2	2		19
41– 46						1	1	2			4
35– 40						1	2				3
29– 34							1				1
Totals	1	0	2	5	10	21	37	26	16	3	121

$r = \cdot 16$ $\quad PE_r = \cdot 06$

TABLE LIII (γ)

Showing Department's marks in Leaving Certificate (Higher) for Latin and University Degree marks in Philosophy (First Ordinary).

University Degree Marks in Philosophy

Department's Marks in Latin	15–19	20–24	25–29	30–34	35–39	40–44	45–49	50–54	55–59	60–64	65–69	70–74	75–79	Totals
80–84								1	1					2
75–79							1		2	1	1		1	6
70–74						1			1	1				3
65–69								3	2	3	1	1		10
60–64					1		3		3	1	2			10
55–59	1				1	1	1		5	4	4			17
50–54						1	1	1	5		2	1		11
45–49								2	2	1				5
40–44				1		1				1	1			4
35–39						1		2		1				4
30–34											1			1
Totals	1			1	2	5	6	9	21	13	12	2	1	73

$r = +0 \cdot 12$ $\quad PE_r = 078$

TABLE LIII (δ)

Showing Department's marks in Leaving Certificate (Higher) for French and University Degree marks in Philosophy (First Ordinary).

University Degree Marks in Philosophy

Department's Marks in French	33–35	36–38	39–41	42–44	45–47	48–50	51–53	54–56	57–59	60–62	63–65	66–68	69–71	72–74	Totals
81–83									1						1
78–80		1					1								2
75–77											1	1			2
72–74							1	2		1		2			6
69–71			1	1	1	1		3	4	2					13
66–68		3		1			1			2		2	2		11
63–65				1			1	2	3	3	3	3			16
60–62				1	1	1	1	3		1		1	1		10
57–59		2	1		1		1	4	3	1		1			14
54–56				1		2	1		3	2		1		1	11
51–53		1			1	3	2	3	3	1					14
48–50			1			1	1	2	3	3	2	1	1		15
45–47									2			1			3
42–44		1		1	2	1	1					1			7
39–41													1		1
36–38	1														1
Totals	1	8	3	6	6	9	11	19	22	16	6	14	5	1	127

$r = .00$ $\quad PE_r = .059$

TABLE LIV (a)

Showing Department's marks in Leaving Certificate (Higher) for English and University Class marks in Philosophy (First Ordinary)

University Class Marks in Philosophy

Department's Marks in English	30–34	35–39	40–44	45–49	50–54	55–59	60–64	65–69	70–74	75–79	80–84	85–89	Totals.
84–87								1					1
80–83							1				1		2
76–79				1		2	1						4
72–75				1	2	1	2						6
68–71				1	4	2	2	1					10
64–67			2	3	5	9	4	1	1			1	26
60–63		1	2	3	5	4	1	1					17
56–59		3	1	11	8	5	6	2	2				38
52–55		4	3	8	11	8	1				1		36
48–51	1		3	2	2	6							14
44–47			1	1									2
40–43				1									1
Totals	1	8	12	32	37	37	18	6	3		2	1	157

$r = +.034$ $\quad PE_r = .048$

TABLE LIV (β)

Showing Department's marks in Leaving Certificate (Higher) for Mathematics and University Class marks in Philosophy (First Ordinary).

University Class Marks in Philosophy

Department's Marks in Mathematics	30–34	35–39	40–44	45–49	50–54	55–59	60–64	65–69	70–74	75–79	80–84	85–89	Totals
95–99								1					1
90–94					1		1						2
85–89		1		1	1	1							4
80–84			2	1	2	3	2				1		11
75–79				1	1	3	4	1	1				11
70–74				6	2	4	1	1					14
65–69			1	4	7	5	1		1				19
60–64	1	2		4	3	3	1	2	1			1	18
55–59		2	1	4	2	5	1						18
50–54		2	2	4	6	1	4						19
45–49					2	1	1						4
40–44				1		1							2
35–39			1	1									2
Totals	1	7	7	27	27	30	16	5	3	0	1	1	125

$r = +0.20$ $\quad PE_r = .058$

TABLE LIV (γ)

Showing Department's marks in Leaving Certificate (Higher) for Latin and University Class marks in Philosophy (First Ordinary).

University Class Marks in Philosophy

Department's Marks in Latin	35–39	40–44	45–49	50–54	55–59	60–64	65–69	70–74	75–79	80–84	85–89	Totals
80–84			1			1						2
75–79			2		2	1				1		6
70–74				2							1	3
65–69		1		3	4	2						10
60–64			3	2	3	1	1					10
55–59	2		3	3	0		2	1				17
50–54		1	1	5		3		1				11
45–49			2	1	2							5
40–44	1	1			1	1						4
35–39			2		2							4
30–34										1		1
Totals	3	3	14	16	20	9	3	2		2	1	73

$r = +0.10$ $\quad PE_r = .078$

TABLE LIV (δ)

Showing Department's marks in Leaving Certificate (Higher) for French and University Class marks in Philosophy (First Ordinary).

University Class Marks in Philosophy

Department's Marks in French	35–39	40–44	45–49	50–54	55–59	60–64	65–69	70–74	75–79	80–84	85–89	Totals
80–84			1									1
75–79	1				2		1				1	5
70–74		1	2	3	6	4	1					17
65–69			3	3	5	2	1					14
60–64		2	3	7	5	6		1				24
55–59		3	3	10	6	1		1				24
50–54			8	5	6	4		1				24
45–49	1	1	2	2	1		1			1		9
40–44		3	2		1		1					7
35–39	1			1			1					3
Totals	3	10	24	31	32	17	6	3		1	1	126

$r = +.320$

$PE_r = .057$

TABLE LV

Summary table showing correlation coefficients (with probable errors) of degree marks and class marks in Philosophy and Department's marks in Leaving Certificate (Higher) for English, Mathematics, Latin, and French.

Correlation between Philosophy and	English			Mathematics			Latin			French		
(Degree or Class Mark)	n	r	PE_r	n	r	PE_r	n	r	PE_r	n	r	PE_r
Degree Mark in Philosophy and	154	0·38	0·047	121	0·16	0·06	73	0·12	0·078	127	0·09	0·059
Class Mark in Philosophy and	157	0·34	0·048	125	0·20	0·058	73	0·10	0·078	128	0·20	0·057

The correlations between the degree marks and the Department's marks do not differ appreciably in any subject from the correlations between the class marks and the Department's marks. They are all low. In Mathematics, Latin, and French they are very low, and even in English they are not high. Yet the correlations in English are so much higher than in the other subjects as to suggest that success in English at the Leaving Certificate examination, though by no means a sure indication of success in Philosophy, is at least a better indication of it than success in Mathematics, Latin, or French.

IX

RELATION BETWEEN DEPARTMENT'S MARKS OR TEACHERS' MARKS IN VARIOUS SUBJECTS IN THE LEAVING CERTIFICATE, AND SUCCESS IN NATURAL PHILOSOPHY (PHYSICS) AT THE UNIVERSITY.

The following tables show for Natural Philosophy (Physics) what the preceding tables have shown for Mental Philosophy. Natural Philosophy is not so foreign to the ordinary Secondary School curriculum as Mental Philosophy, so that higher correlations might reasonably be expected.

TABLE LVI

Summary table showing correlation coefficients (with probable errors) of Department's marks in Leaving Certificate (Higher) for English, Science, and Mathematics, and class marks in Natural Philosophy (Physics)

	n	r	PE_r
English . .	100	0·38	0·06
Science (Higher) . .	73	0·47	0·06
Mathematics (Higher) . .	68	0·27	0·06

TABLE LVII

Showing mean Department's and Teachers' marks in Leaving Certificate in English, Higher Mathematics, and Higher Science, of students who passed in, failed in, or were exempt from the Ordinary degree examinations in Natural Philosophy (*Physics*)

		Men and Women				
		Pass [1]	Fail [1]	Exempt	Non-Exempt	Totals
Department's Marks	English	56·1 (26)	53·5 (22)	60·0 (49)	55·1 (51)	57·9 (100)
	Maths	61·2 (27)	65·2 (22)	72·0 (49)	63·3 (49)	67·7 (98)
	Science	58·0 (20)	54·9 (14)	66·5 (39)	56·7 (34)	61·9 (73)
Teachers' Marks	English	56·6 (27)	56·5 (19)	62·9 (47)	56·5 (46)	59·7 (93)
	Maths	60·5 (26)	63·6 (22)	68·7 (47)	61·9 (48)	65·3 (95)
	Science	58·0 (18)	59·5 (12)	65·8 (37)	59·2 (30)	62·8 (67)

[1] All figures in these "Pass" and "Fail" columns refer to first attempts. The figures in brackets show frequencies.

The first of these two tables (LVI) shows that there is some relation, though not a very close relation, between success in these three subjects at school and success in Natural Philosophy (Physics) at the University. The relation is naturally closest in the case of Science, since the school course in Higher Science serves to some extent as an introduction to the University course in Natural Philosophy. If the relation between English and Natural Philosophy is not very close, it is still quite as close as the relation between English and Mental Philosophy. But it is

surprising that the correlation of Mathematics with Natural Philosophy (Physics) should be so low; it may be partly because admission to a graduation course in Natural Philosophy is conditional on the student having passed in Mathematics on the Higher Standard or produced some other evidence of proficiency in Mathematics, so that only a very selected group of students is considered here, and with such selected groups correlations tend to be low.

The same surprise, however, awaits us in the second table, where it appears that both the Department and the teachers have given a higher average mark in Mathematics to the pupils who afterwards failed than to those non-exempt students who afterwards passed in the Ordinary degree examinations in Natural Philosophy (Physics). Otherwise both the teachers' marks and the Department's marks gave a sound indication of what was likely to happen in the degree examinations. In every case the mean mark of the "Exempts" is higher than that of the "Non-exempts," the difference being slightly greater in the case of the Department's marks than in the case of the teachers' marks. As between "Passes" and "Fails" also, the Department's marks are the better guide. Except in Mathematics, where the prognostications of both the Department and the teachers are wrong, the Department's mean marks are higher for the "Passes" than for the "Fails," while the teacher's mean mark is higher for the "Fails" than for the "Passes" in Science, and in English is almost the same

PART III

MEDICINE

GENERAL DEDUCTIONS

I

INTRODUCTORY

BEFORE proceeding to the analysis of the data regarding entrants to the Faculty of Medicine, it may be advisable to present a brief outline of the medical curriculum

The course of studies for the Degrees of M.B., Ch.B. of the University in question covers a period of five years (57 months), exclusive of any period spent, after leaving school, in preparation for the Preliminary and Pre-Registration Examinations.

The minimum age at which a student may be admitted to the course is 17 years.

The medical curriculum may be divided broadly into two parts: a pre-clinical period extending over two years, followed by a clinical period covering three years. During the pre-clinical period the student is occupied with the basic scientific subjects. In the first year, courses in Chemistry, Zoology, Botany, and Physics are attended, and, although no Professional Examination in Anatomy is included in that year, a course of lectures and practical work in the subject is taken concurrently with the first four subjects mentioned above. The First Professional Examination is completed normally at the end of the first year, leaving the student free in the following year to continue the study of Anatomy, and in addition to take up Physiology. The Second Professional Examination, consisting of Anatomy and Physiology, is held at the end of the second year, and forms the gateway to the second, or clinical, section of the curriculum.

The three years' clinical period is, of course, devoted mainly to clinical instruction, but lecture courses, particularly in the first year of this period (*i.e.* the third year of the course), are also given. In this first year the curriculum consists of co-ordinated lectures and practical courses in Medicine, Surgery, Pathology, Bacteriology, Materia Medica, and Therapeutics, as well as clinical instruction in Medicine and Surgery. In the second and third years of the clinical period the student's time is occupied almost entirely with clinical instruction, the second year being devoted to Clinical Surgery and Clinical Medicine; while in the third year of this period clinical work in Midwifery, Gynæcology, Child Life and Health, Venereal Diseases, Tuberculosis, Diseases of the Ear, Nose, and Throat, Diseases of the Skin, and Diseases of the Eye is undertaken.

The Professional Examinations in the clinical period are the Third and the Final, the Third being taken at the end of the third year of the course, the first part of the Final (embracing Forensic Medicine and Public Health) at the end of the fourth year, and the second part of the Final, *i.e.* the main examination, on the conclusion of the course of study at the end of the fifth year. Each part of the Final Examination must be passed as a whole. Success at this examination entitles the student to graduate M.B., Ch.B. The curriculum throughout the five years occupies the whole time of the student.

II

COMPARATIVE STATEMENT OF DIFFERENT ENTRANCE QUALIFICATIONS

The number of medical students considered in this inquiry, classified according to their date of graduation and their entrance qualification for the course, is set forth below in Tables LVIII-LXI.

TABLE LVIII

Showing the number of students, men and women separately, who matriculated in the Faculty of Medicine in 1928, and the number of those who graduated at various dates or who had not completed their degree

	Men	Women	Men and Women
Graduated in July 1933 .	52	10	62
,, ,, December 1933	6	3	9
,, ,, July 1934 .	27	4	31
,, ,, December 1934	8	1	9
Continuing course .	26	5	31
Abandoned course . .	21	3	24
Transferred to other University or College	22	.	22
Graduated before July 1933 owing to exemption from early professional examination(s) [1] . . .	25	1	26
Matriculated, but sat no class or professional examinations . .	29	2	31
Totals	216	29	245

[1] Students with qualifications from other universities who were exempted from First or First and Second Professional Examinations

TABLE LIX

Showing the different entrance qualifications of the 214 students whose cases were investigated, the number of students who entered with each of these qualifications, and the number in each category who graduated at various dates or who did not complete their degree.

	Entered with	Graduated in July 1933	Graduated in December 1933	Graduated in July 1934	Graduated in December 1934	Continuing Course	Abandoned Course	Transferred to other University or College	Graduated before July 1933 [1]	Totals
1	Leaving Certificate	28	1	8	2	3	3	2	.	47
2	Leaving Certificate and Preliminary Examination	5 [2]		2		3	1	1	.	12 [2]
3	Preliminary Examination [3] .	9	1	9	3	14	3	6	.	45
4	Preliminary Examination and English or Welsh Certificate	3				1	2			6
5	English or Welsh Certificate	12	3	6	1	5	4	.	1	32
6.	Exemption under Section VIII [4]		1			2	3	1	.	7
7	Degree from British University			1	.		.	1	4	6
8	Foreign Qualification . .	5	3	5	3	4	7	11	21	59
	Totals	62	9	31	9	32	23	22	26	214
	Matriculated, but sat no class or professional examinations							.	..	31
	Total	.	.	..	.	..	..	..	.	245

[1] Students with qualifications from other universities who were exempted from First or First and Second Professional Examinations

[2] One student was granted the old "Lower Leaving Certificate" in 1923 and is not included in Tables LXII *et seq*

[3] All but 6 of these students attended Scottish schools.

[4] Under Section VIII of Ordnance No. LXX of the Scottish Universities Entrance Board, the Board are empowered to give special consideration to the case of an applicant who is not less than 21 years of age, provided satisfactory evidence is produced to the Board that the applicant possesses a good general education and provided the Board are satisfied of the applicant's fitness to enter upon the curriculum for a Degree.

TABLE LX

Giving in percentage form the same information as Table LIX

	Entered with	Graduated in July 1933	Graduated in December 1933	Graduated in July 1934	Graduated in December 1934	Continuing Course	Abandoned Course	Transferred to other University or College	Graduated before July 1933	Totals
1	Leaving Certificate	11·42	41	3·27	·82	1·23	1·22	·82		19·19
2	Leaving Certificate and Preliminary Examination	2·04		·82		1·22	·41	·41		4·90
3	Preliminary Examination	3·67	·41	3·67	1·22	5·71	1·22	2·45		18·35
4	Preliminary Examination and English or Welsh Certificate	1·22				·41	·82	.	.	2·45
5	English or Welsh Certificate	4·90	1·22	2·45	·41	2·04	1·63		·41	13·06
6	Exemption under Section VIII		·41			·82	1·22	·41		2·86
7	Degree from British University			·41				·41	1·63	2·45
8	Foreign Qualification	2·04	1·22	2·04	1·22	1·63	2·86	4·49	8·57	24·07
	Totals	25·20	3·67	12·66	3·67	13·06	9·35	8·90	10·61	87·33
	Matriculated, but sat no class or professional examinations									12·67
	Total									100

TABLE LXI

Showing the type of entrance qualification of students who were exempted from the Pre-Registration Examination through possessing a previous qualification in Science, and of those who had to pass the Pre-Registration Examination, and the number in each category who graduated at various dates or who did not complete their degree.

	Entered with	Graduated in July 1933	Graduated in December 1933	Graduated in July 1934	Graduated in December 1934	Continuing Course	Abandoned Course	Transferred to other Universities or Colleges	Graduated before July 1933[1]	Totals	
1.	Leaving Certificate—										
	with Higher Science	13	1	5	2	1		1		23	47
	with Pre-registration Examination	15		3		1	4	1		24	
2	Leaving Certificate and Preliminary Examination—										
	with Physical Science	1		1						2	12
	with Pre-registration Examination	4	.	1		3	1	1		10	
3	Preliminary Examination—										
	with Physical Science	2	..	.	1	1		1	..	5	45
	with Pre-registration Examination	7	1	9	2	13	3	5	.	40	
4.	Preliminary Examination and English or Welsh Certificate—										
	with previous Science qualification	1		.		.	..	..	..	1	6
	with Pre-registration Examination	2	.			1	2	.	..	5	
5.	English or Welsh Certificate—										
	with previous Science qualification	6		2		.	1	..	1	10	32
	with Pre-registration Examination	6	3	4	1	5	3	.	..	22	
6.	Exemption under Section VIII—										
	with previous Science qualification	.	.	.	..	2	1	1		4	7
	with Pre-registration Examination	.	1		.	.	2	.	.	3	
7.	Degree from British University	.	.	1	.	.	.	1	4	6	
8.	Foreign Qualification—										
	with previous Science qualification	3	3	5	3	3	6	9	21	53	59
	with Pre-registration Examination	2	.	..	..	1	1	2	..	6	
	Totals	62	9	31	9	31	24	22	26	214	
	Matriculated, but sat no class or professional examinations	.	..	..	..	..	..	..	..	31	
	Total	..	..	..	..	..	..	..	..	245	

[1] See footnote 1 to Table LVIII.

III

GENERAL PROGNOSTIC VALUE OF LEAVING CERTIFICATE

For students (58) entering by the Leaving Certificate the information available comprises, as in the case of the Arts and Science students,[1] the Head Teacher's estimate, the teachers' marks in the various subjects for which the pupil was presented at the Leaving Certificate Examination, the Department's marks in the various subjects, and the success or failure as judged by the award of the Leaving Certificate; the University data available include the date of graduation and success or failure in the various professional examinations. Tables LXII–LXIV α, β, γ, δ, and ϵ deal with these data.

[1] See p. 19

TABLE LXII

Showing Head Teacher's opinion of all Leaving Certificate candidates and date of graduation.

Head Teacher's Opinion	Graduated July 1933	Graduated Dec. 1933	Graduated July 1934	Graduated Dec. 1934	Continuing Course	Abandoned Course	Transferred to other Universities and Colleges	Totals
Ex.	1		1					2
V.G.	13	1	3		1	2		20
G.+	2		2					4
G.	8		4	2	2	1	2	19
G.–	1							1
F.G.+	2							2
F.G	5				3	1	1	10
Totals	32	1	10	2	6	4	3	58

TABLE LXIII

Showing composite Leaving Certificate mark and date of graduation

Composite Leaving Certificate Mark	Graduated July 1933	Graduated Dec. 1933	Graduated July 1934	Graduated Dec 1934	Continuing Course	Abandoned Course	Transferred to other Universities and Colleges	Totals
77–78	1		1					2
75–76								
73–74								
71–72			1					1
69–70	1							1
67–68			1					1
65–66	2							2
63–64	5					1		6
61–62	1		2			1		4
59–60	6		1	1		1		9
57–58	2	1	2		1			6
55–56	1				2			3
53–54	4		1					5
51–52	4			1	1		2	8
49–50	2							2
47–48	2						1	3
45–46					1			1
43–44			1		1			2
41–42						1		1
39–40	1							1
Totals	32	1	10	2	6	4	3	58
Mean Marks	58	58	61·2	56	51·7	56·75	49·67	57·3

TABLE LXIV (a)

Showing the number of Highers obtained in the Leaving Certificate at the first sitting by students who graduated in July 1933, Dec 1933, July 1934, Dec 1934, and had not then graduated.

Number of Highers in Leaving Certificate	Graduated July 1933	Graduated Dec. 1933	Graduated July 1934	Graduated Dec 1934	Not then Graduated	Abandoned Course	Totals
0			1				1
1	2				3	1	6
2	7		1		1		9
3	11	1	3	2	4	2	23
4	11		4		1	1	17
5	1		1				2
Totals	32	1	10	2	9	4	58
Mean No. of Highers	3·06	3	3·2	3	2·33	2·75	2·95

TABLE LXIV (β)

Giving the same information in percentage form.

Number of Highers in Leaving Certificate	Graduated July 1933	Graduated Dec. 1933	Graduated July 1934	Graduated Dec 1934	Not then Graduated	Abandoned Course	Totals
0			1·72				1·72
1	3·45				5·17	1·72	10·34
2	12·07		1·72		1·72		15·51
3	18·98	1·72	5·17	3·45	6·90	3·45	39·67
4	18·98		6·90		1·72	1·72	29·32
5	1·72		1·72				3·44
Totals	55·20	1·72	17·23	3·45	15·51	6·89	100

TABLE LXIV (γ)

Showing the number of failures in professional examinations, up to and including those held in December 1934, of students who gained 0, 1, 2, 3, 4, 5 Highers in Leaving Certificate.

Number of Highers in Leaving Certificate	Number of Failures in Professional Examinations																					Totals	Mean Number of Failures
	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20		
0	1																					1	0
1	1	1			2		1				1											6	4·17
2	2	1	1	3		1						1										9	3·11
3	9	2	3	1	1	1	2		1	1	1	1										23	3·04
4	9	2		2	1	1									1						1	17	3·00
5	2																					2	0
Totals	24	6	4	6	4	3	3		1	1	2	2			1						1	58	

TABLE LXIV (δ)

Showing number and type of subjects in Leaving Certificate and number of failures in various professional examinations

Number of Highers in Leaving Certificate		Frequency	First Professional								Second Professional						Third Professional						Final Professional														
			Number of Failures in				Attempt at which Exam was Passed				No of Failures in		Attempt at which Exam was Passed				No of Failures in		Attempt at which Exam was Passed					Number of Failures in								Attempt at which Exam was Passed		
			Physics	Bot.	Chem	Zoo	1st	2nd	3rd	4th	Phys	Anat	1st	2nd	3rd	4th	Path	Mat Med	1st	2nd	3rd	4th	5th	For Med	Pub Health	Mid-wifery	C Mid and C Gyn	Surgery	C Surg	Medicine	C Med	1st	2nd	3rd
Classical Course	2	1					1						1						1													1		
	3																																	
	4	2			1	1	1	1			1		1	1					2					1	1							1	1	
Totals		3			1	1	2	1			1		2	1					3					1	1							2	1	
Latin-French Course	0	1					1						1						1													1		
	1	3	3			2	1	1		1			2						2													2		
	2	3			3	2		3			1		2	1					3													3		
	3	5	2		1	4	1	2	1	1	3	1	1		1		1	1	1	1					1		1	1	1	1		1		
	4	1				1		1			2				1				1													1		
Totals		13	5		4	9	3	7	1	2	6	1	6	1	2		1	1	8	1						1	1	1	1	1	1	8		
Science Course	1	3	2	1	2	3		1	2		5	2				1	3	3				1													
	2	5			2	1	3	2			4	3	2	2		1	5	5	3		1			1	1							3	1	
	3	18			6	10	10	4	2	2	3	4	12	5	1		7	8	11	5		1		1	1	2	2	2	2	2	2	14	2	
	4	14	1		2	2	12	1			4	3	8	3	1		3	5	9	1	1		1			3	3	3	3	3	3	11		1
	5	2					2						2						2													2		
Totals		42	3	1	12	16	27	7	5	2	16	12	24	10	2	2	18	21	25	6	2	2	1	2	2	5	5	5	5	5	5	30	3	1
Totals		58	8	1	17	26	32	15	6	4	23	13	32	12	4	2	19	22	36	7	2	2	1	3	3	6	6	6	6	6	6	40	4	1

TABLE LXIV (ε)

Showing number and type of subjects in Leaving Certificate and percentage passing various professional examinations.

Number of Highers in Leaving Certificate		Frequency	First Professional					Second Professional					Third Professional						Final Professional			
			1st Att	2nd Att	3rd Att	4th Att	% Passed — Totals	1st Att	2nd Att	3rd Att	4th Att	% Passed — Totals	1st Att	2nd Att	3rd Att	4th Att	5th Att	% Passed — Totals	1st Att	2nd Att	3rd Att.	% Passed — Totals
Classical Course	2	1	100				100	100				100	100					100	100			100
	3																					
	4																					
	5	2	50	50			100	50	50			100	100					100	50	50		100
Totals		3	66 67	33 33			100	66 67	33 33			100	100					100	66 67	33 33		100
Latin-French Course	0	1	100				100	100				100	100					100	100			100
	1	3	33·33	33 33		33 33	100	66 67				66 67	66 67					66 67	66 67			66 67
	2	3		100			100	66 67	33 33			100	100					100	100			100
	3	5	20	40	20	20	100	20		20		40	20	20				40	20			20
	4	1		100			100			100		100	100					100	100			100
Totals		13	23·08	53 85	7 69	15 38	100	46 16	7 69	15 38		69 23	61 54	7 69				69 23	61 54			61 54
Science Course	1	3	33 33		66 67		100				33 33	33 33				33 33		33 33				
	2	5	60	40			100	40	40		20	100	60		20			80	60	20		80
	3	18	55·56	22·22	11 11	11 11	100	66 67	27 78	5 55		100	61 11	27 78		5 55		94 44	77 78	11 11		88·89
	4	14	85·71		7 14		92 85	57 14	21 43	7 14		85 71	64 29	7 14	7 14		7 14	85 71	78 57		7 14	85·71
	5	2	100				100	100				100	100					100				100
Totals		42	64 30	16·66	11 91	4 76	97 03	57 15	23 81	4 76	4 76	90 48	59 53	14 29	4 76	4 76	2 38	85 72	71 44	7 14	2 38	80 96
			Total Number Entering University with Leaving Certificate																			
Totals		58	55·17	25 86	10 35	6 90	98 28	55 17	20 70	6 90	3 45	86 22	62 10	12 08	3 45	3·45	1 73	82 81	69 0	6 90	1·73	77 63

In these tables the date of graduation is taken as a measure of success. Delay in graduation, however, while in the main due to failures in professional examinations, may be due to other causes and therefore is not an entirely reliable index of success.

The Head Teacher's opinion in regard to the pupil's chance of success at the Leaving Certificate Examination is apparently of slight value in predicting success in the University medical course, as measured by the date of graduation. The Leaving Certificate Examination itself may possibly be of somewhat greater value.

The majority of students entering by way of the Leaving Certificate Examination graduate in July 1933, but their average mark at the Leaving Certificate Examination is 3 2 below the mark of those who did not graduate till a year later The lowest Composite Leaving Certificate mark [1] of all was gained by a student who graduated in July 1933 The mean Composite Leaving Certificate Mark of those who graduated in December 1934 is only 2 lower than that of those who graduated in July 1933, and is 75 lower than that of those who abandoned the course. On the evidence of these marks it cannot be said that the students who discontinued the course could not, with one exception, have done at least as well as those who graduated in December 1934. The lowest mean mark of all is that of the group who have been transferred to other universities and colleges.

Of all students entering the University by way of the Leaving Certificate Examination, the largest group is that of the students with three Highers, representing 39 67 per cent. of the total number. Next come those entering with four Highers, who constitute 29 32 per cent of the total number.

The greatest mean number of Highers was obtained by those students who graduated in July 1934 Recalling the results of Table LXIII, we might infer that this indicated a certain superiority amongst this group, but considering the smallness of the numbers this inference is hardly justified.

Those who abandoned the course had a higher mean number of Highers than those who had not graduated in December 1934 —a fact which supports the evidence afforded by Table LXIII, *i.e.* that, on this evidence, they would have been just as likely to graduate as those who continued their course.

Of the 58 entering, 45 completed the course successfully.

[1] For method of calculating Composite Mark see p. 23.

At the First Professional Examination one failed and three abandoned the course; at the Second Professional Examination four failed; at the Third two failed; and in the Final three failed. It will be seen that the greatest number of failures occurs at the Second Professional Examination.

The three pupils who took the Classical Course at school all completed their medical course at the University, but the number is too small to admit of valid comparison with the other groups. Of the thirteen pupils who took the Latin-French Course at school, only eight, or 61·54 per cent. of the initial enrolment, successfully completed the medical course; the greatest drop took place after the First Professional All passed their First Professional Examination, but only nine passed the Second and Third Professional, and eight passed the Final. Of the forty-two who took the Science Course at school, thirty-four or 80 96 per cent. successfully completed the medical course, and this compares very favourably with the percentage of the Latin-French pupils, with Science pupils the number failing at successive professional examinations remains relatively constant, and the Second Professional Examination has not the same marked effect as it has on the Latin-French pupils.

If we consider for the various school courses the average number of times a student fails in any subject of his professional examinations, it would appear that the Science pupils have a greater number of failures; thus—

	Number of Failures	Number taking Course	Average per Student
Classical Course .	5	3	1 66
Latin-French Course	33	13	2 54
Science Course .	133	42	3·16

but this apparent anomaly can be accounted for by the fact that a higher percentage of Science students survive the earlier professional examinations and have consequently more opportunities for failure. We must, therefore, consider the numbers sitting each professional examination, which are as follows:—

For students entering the University by way of the Leaving Certificate Examination—

	First Professional		Second Professional		Third Professional		Final Professional	
	No Sitting	No Passed	No Sitting	No Passed	No Sitting	No Passed	No Sitting	No. Passed
Classical Course	3	3	3	3	3	3	3	3
Latin-French Course	13	13	11	9	9	9	9	8
Science Course	42	41	40	38	38	36	36	34
Totals	58	57	54	50	50	48	48	45

Calculating the average number of failures per student for those who actually sat the various professional examinations, we find, for students entering the University by way of the Leaving Certificate Examination—

	1st Pro	2nd Pro	3rd Pro	Final Pro.	Weighted Averages
Classical Course	·67	33	0	·67	46
Latin-French Course	1 38	64	22	67	79
Science Course	76	7	1 03	94	85

It is evident from this method of calculation that there is no great difference between the Latin-French Course and the Science Course students.

Proceeding to consider the subjects of the professional examinations in which students fail, we find that in the First Professional for all students, no matter what the school course has been, the number of failures in Zoology (26) is equal to the number of failures in Physics (8), Botany (1), and Chemistry (17) taken together, so that Zoology is definitely the subject in the First Professional Examination that causes most difficulty. In the Second Professional Examination Physiology causes more failures (23) than Anatomy (13). In the Third Professional Examination thirty-eight students who had taken the Science Course at school have thirty-nine failures—Pathology (18) and Materia Medica (21)—or an average of one failure for each student taking the examination.

IV

EFFECT ON UNIVERSITY MEDICAL RESULTS OF REMAINING FOR AN ADDITIONAL YEAR AT SCHOOL AFTER QUALIFYING FOR LEAVING CERTIFICATE

More than half (33) of the students entering the University by way of the Leaving Certificate Examination only, or by the Leaving Certificate supplemented by passes in the Preliminary Examination, went straight to the University. Sixteen (or approximately 50 per cent. of these) graduated in July 1933. Of the twenty-five who remained at school for an additional year, sixteen or 64 per cent. graduated in July 1933 This difference of 14 per cent. would suggest that the additional year had been an advantage

Up to December 1934, however, twenty-six out of thirty-three or 78 8 per cent. of those who went straight to the University, had passed the Final Professional Examination, while of the twenty-five who remained another year at school, nineteen or 76 per cent. had completed the Final Examination. Here there is no significant difference.

Of those who remained at school adding subjects to the Leaving Certificate, fifteen out of eighteen or 83 33 per cent. graduated by December 1934. As twenty-six out of thirty-three or 78·8 per cent. of those who had gone straight to the University had graduated by December 1934, the comparison is $4\frac{1}{2}$ per cent. in favour of remaining at school and adding subjects.

TABLE LXV

Showing effect of an additional year at school

	Graduated in July 1933	Graduated in Dec 1933	Graduated in July 1934	Graduated in Dec 1934	Continuing Course	Abandoned Course	Transferred to Other Universities or Colleges	Graduated before July 1933	Totals
Entered University on attaining Leaving Certificate	16	1	7	1	3	2	1	.	31
Remained at school after attaining Leaving Certificate, adding no subject .	3				1			.	4
Remained at school after attaining Leaving Certificate, adding subjects .	12	.	2	1		2	1		18
Failed to obtain Group Leaving Certificate and entered University with Leaving Certificate Passes and Preliminary Examination Passes									
(i) without additional year			1		1		.		2
(ii) with additional year	1		..		1		1	.	3
Totals	32	1	10	2	6	4	3		58

V

GENERAL PROGNOSTIC VALUE OF PRELIMINARY EXAMINATION

In Arts and Pure Science the number of students entering by the Preliminary Examination is very much smaller than the number entering by the Leaving Certificate. In Medicine, however, the numbers are approximately equal; it has been thought advisable, therefore, to present the data set forth in Tables LXVI α and β.

TABLE LXVI (a)

Showing number and type of subjects in Preliminary Examination and number of failures in various professional examinations

Number of Highers in Preliminary Examination		Frequency	First Professional										Second Professional							Third Professional						Final Professional										
			Number of Failures in				Attempt at which Examination was Passed						No of Failures in		Attempt at which Examination was Passed					No of Failures in		Attempt at which Examination was Passed				Number of Failures in								Attempt at which Examination was Passed		
			Physics	Bot	Chem.	Zoo	1st	2nd	3rd	4th	5th	6th	Phys	Anat	1st	2nd	3rd	4th	5th	Path	Mat Med	1st	2nd	3rd	4th	For Med	Public Health	Mid-wifery	C Mid and C Gyn	Surgery	C Surg	Med	C Med	1st	2nd	3rd
Classical Course	0	1				1			1						1							1												1		
	1	3	2	1	2	1		1		1		1	2	3	1		1			1	1	1	1			2	2									
	2																																			
Totals		4	2	1	2	2		1	1	1		1	2	3	2		1			1	1	2	1			2	2							1		
Latin-Fr'ch Crse.	1	9	3	2	4	9	2		1	1	2	2	6	11	3		1		2	4	4	2	3	1				1	1	1	1	1	1	2	1	
	2	5	4	1	2	3	2		1	1			2		2	2				2	1	2	2											4		
Totals		14	7	3	6	12	4		2	2	2	2	8	11	5	2	1		2	6	5	4	5	1				1	1	1	1	1	1	6	1	
Science Course	0	4	4	1	1	3	1		2			1		6	1		1	1	1	3	3	2		1	1	2	2	1	1	1	1	1	1	1	2	
	1	8	4	2	4	6	2	1	3			2	4	4	2	1	3			5	5	4		1	1			1	1	1	1	1	1	3		
	2	5			1	2	3		1	1			1	3	2	2	1			2	2	2	2			1	1							2		
	3	5				2	4		1				1		3	1						4												4		
	4	1				1		1						2			1					1						1	1	1	1	1	1		1	
Totals		23	8	3	6	14	10	2	7	1		3	6	15	8	4	6	1	1	10	10	13	2	1	1	3	3	3	3	3	3	3	3	10	3	
Mod Lang Course	1	1				1		1						1		1						1						1	1	1	1	1	1		1	
	2	1	1			1																														
	3	2	1			2	1			1				1	1		1			1	1	1	1													
Totals		4	2			4	1	1		1				2	1	1	1			1	1	2	1					1	1	1	1	1	1		1	
Total Number Entering University with Preliminary Examination Passes																																				
Totals		45	19	7	14	32	15	4	10	5	2	6	16	31	16	7	9	1	3	18	17	21	9	2	1	5	5	5	5	5	5	5	5	17	5	

TABLE LXVI (β)

Showing number and type of passes in Preliminary Examination and percentage passing various professional examinations.

Number of Highers in Pre-liminary Exam		Frequency	First Professional							Second Professional						Third Professional					Final Professional		
			1st Att	2nd Att	3rd Att	4th Att	5th Att	6th Att	% Passed — Totals	1st Att	2nd Att	3rd Att	4th Att	5th Att	% Passed — Totals	1st Att	2nd Att	3rd Att	4th Att	% Passed — Totals	1st Att	2nd Att	% Passed — Totals
Classical Course	0	1			100				100	100					100	100				100	100		100
	1	3		33·33		33·33		33 33	100	33 33		33 33			66 67	33 33	33 33			66 67			
Totals		4		25	25	25		25	100	50		25			75	50	25			75	25		25
Latin-French Course	1	9	22·22		11 11	11 11	22 22	22 22	88 88	33 33		11 11		22 22	66 67	22 22	33 33	11 11		66 67	22 22	11 11	33·33
	2	5	40		20	20			80	40	40				80	40	40			80	80		80
Totals		14	28 57		14 29	14 29	14 29	14 29	85 73	35 72	14 29	7 14		14 29	71 44	28 57	35 72	7 14		71 43	42 86	7 14	50
Science Course	0	4	25		50			25	100	25		25	25	25	100	50		25	25	100	25	50	75
	1	8	25	12·5	37 5			25	100	25	12 5	37 5			75	50		12 5	12 5	75	37·5		37 5
	2	5	60		20	20			100	40	40	20			100	40	40			80	40		40
	3	5	80		20				100	60	20				80	80				80	80		80
	4	1		100					100			100			100	100				100		100	100
Totals		23	43·48	8·70	30·44	4 35		13 03	100	34 70	17 40	26 00	4·35	4 35	86 98	56 54	8 70	4 35	4 35	73 94	43 49	13 05	56 54
Mod. Lang Course	1	1		100					100		100				100	100				100		100	100
	2	1			Given up																		
	3	2	50			50			100	50		50			100	50	50			100			
Totals		4	25	25		25			75	25	25	25			75	50	25			75		25	25
Total Number Entering University with Preliminary Examination Passes																							
Totals		45	33·33	8·89	22·22	11 11	4 44	13 33	93·32	35 56	15 55	20 00	2 22	6 67	80	46 67	20 00	4 44	2 22	73 33	37 78	11 11	48 89

Forty-five students entered by the Preliminary Examination alone. From Table LIX [1] we find that, of fifty-eight students who entered by the Leaving Certificate or by the Leaving Certificate and the Preliminary Examination, forty-six or 79·31 per cent. graduated by December 1934, whereas of the forty-five students entering by the Preliminary Examination alone, twenty-two or 48·89 per cent. completed the course by the same date. The advantage is clearly in favour of those entering by the Leaving Certificate.

The total number of failures in the First Professional for all forty-five students entering by the Preliminary Examination was 72, giving an average of 1 6 per student. Forty-two of the forty-five passed, and thirty-nine sat the Second Professional Examination, where the number of failures is 47, the average per student being 1 2 Thirty-five of these sat the Third Professional, where there were 35 failures, the average being 1 per student, and thirty-one sat the Final Professional, where the number of failures was 40, the average being 1 62 per student

Considering that less than 49 per cent of the initial number of students complete the course successfully, and taking into account the number of attempts necessary at successive professional examinations, we can infer that the students entering by the Preliminary Examinations are a poorer group than the group entering by the Leaving Certificate Examination

The first serious drop in the percentage passing occurs after the First Professional; 93 22 per cent. pass the First Professional, but only 80 per cent pass the Second Professional Examination, the only group where the numbers at this stage are maintained being the group taking the Modern-Language Course at school. The most serious drop of all occurs at the Final Professional Examination. Whereas 73·33 per cent. of the original number pass the Third Professional, less than 49 per cent. of the original number pass the Final Professional Examination.

The percentage who reached the stage of sitting the Final Examination (*i.e.* passed the Third Professional) is even smaller than the percentage of students entering with the Leaving Certificate who passed the Final Professional Examination.

If we make a comparison of the University results of those entering by the Preliminary Examination according to the four

[1] See p. 122.

different types of school courses, we find that the group with the greatest number of passes in the Final Professional Examination is that taking the Science Course, where 56 per cent. of the initial numbers pass the Final Professional Examination. The lowest percentage passing in all groups occurs in the Classical Course and Modern-Language Course, where 25 per cent. of the initial numbers complete the medical course successfully.

If we assume that the students who took the Preliminary Examination in certain groups had taken the corresponding school courses we can then make a similar comparison to that made (see p. 135) with the Leaving Certificate entrants.

	First Professional		Second Professional		Third Professional		Final Professional	
	No Sitting	No Passed	No Sitting	No Passed	No Sitting	No Passed	No Sitting	No Passed
Classical Course .	4	4	3	3	3	3	3	1
Latin-French Course .	14	12	12	10	10	10	8	7
Science Course .	23	23	21	20	19	17	17	13
Mod. Lang Course .	4	3	3	3	3	3	3	1
Totals	45	42	39	36	35	33	31	22

Of the four students (see Tables LXVI α and β) who took the Classical Course at school only one completed the medical course successfully, the total number of failures in the various individual examinations being 18, 12 of which occurred in the First and Second Professional Examinations. Of the fourteen students who took the Latin-French Course at school, seven completed the course successfully, the total number of failures in the various examinations throughout the course being 64, 47 of which occurred in the First and Second Professional Examinations. Of the twenty-three students taking the Science Course at school, thirteen completed the course successfully, the total number of failures in the various examinations throughout the course being 96, 52 of which occurred in the First and Second Professional Examinations.

Of the four students taking the Modern-Language Course at school, only one completed the course successfully, the total number of failures in the various examinations throughout the

course being 16, 8 of which occurred in the First and Second Professional Examinations. The average number of failures of those who took the Classical Course is 4 5 per student, of those who took the Latin-French Course 4 57, of those who took the Science Course 4·17, and of those who took the Modern-Language Course 4.

Calculating as before the average number of failures per student for those who actually sat the various professional examinations, we find for those entering by the Preliminary Examination:

	1st Pro	2nd Pro	3rd Pro.	Final Pro	Weighted Averages
Classical Course	1 75	1 67	1 0	1 33	1·38
Latin-French Course	2 00	1 58	1 1	75	1 45
Science Course	1 35	1 00	1 05	1 41	1 2
Mod Lang Course	1 5	67	67	2 00	1 23

Comparing the weighted averages of the number of failures per student in the three comparable school courses, we find [1] that for those entering by the Preliminary Examination they are from 50 to 200 per cent. greater than the weighted averages of those entering by the Leaving Certificate.

If we consider the subjects in which students fail, we find that Zoology is again the cause of the greatest number of failures in the First Professional Examination, and Botany accounts for a smaller number of failures than any other subject. The order is: Zoology (32), Physics (19), Chemistry (14), and Botany (7). In the Second Professional Examination, however, the results found for students entering by the Preliminary Examination are exactly the reverse of those found for students entering by the Leaving Certificate Examination. Here the greater number of failures occurs in Anatomy (31), and the number is almost twice the number of failures in Physiology (16). This state of affairs is not limited to one group, but is found in all groups entering by the Preliminary Examination.

[1] See p 135.

VI

INDIVIDUAL DISCREPANCIES BETWEEN LEAVING CERTIFICATE AND PRELIMINARY EXAMINATION RESULTS, AND RESULTS IN PROFESSIONAL SUBJECTS

THE two extreme cases of discrepancy shown in Table LXVII can be accounted for by the fact that the subjects in the Final Examination hang together, failure in one involving failure in all six. Thus a student who fails twice in the Final is credited with twelve failures.

TABLE LXVII

Showing cases of individual discrepancy—Students with three or more highers (Leaving Certificate or Preliminary Examination) and five or more failures

Passes on Higher Standard	Pre-registration Examination	Date of Granting admission	First Professional					Second Professional			Third Professional			Final Professional									Total No of Failures
			Number of Failures in				Date Passed	No of Failures in		Date Passed	No. of Failures in		Date Passed	Number of Failures in							Date Passed		
			Phys	Bot	Chem	Zoo		Phys	Anat		Path	Mat Med		For Med	Public Health	Midwifery	C. Mid & C Gyn	Surgery	C Surgery	Medicine	C Med		
E,[1] M,[2] S[3]	L C	8/ 8/28			3		Mar 1930	1		Oct 1931			July 1933	1	1								6
E, M, S	L C.	21/ 9/28			1	1	July 1929	1		July 1930			July 1931			1	1	1	1	1	Dec 1933	9
E, M, F,[4] S	L C	30/ 8/28					July 1929	1		Oct 1930		1	Oct 1931			2	2	2	2	2	July 1934	14
E, M, F	L C	27/ 9/28				1	July 1929	2	1	Mar 1931			June 1932			1	1	1	1	1	Dec 1934	10
E, M, S	L C.	27/ 9/28				2	Mar 1931			Oct 1932	3	3											8
M, F, S	L C	23/10/28				3	Oct 1930			Oct 1931	1	1	Oct 1932			1	1	1	1	1	Dec 1934	11
E, M, S	L C	6/ 8/28			1	1	Oct 1929	1	1	Oct 1930	1	1	Oct 1931								July 1933	6
E, M, F, S	L C	5/ 9/28			2		Oct 1929	1	2	Mar 1931	2	1	Mar 1933			2	2	2	2	2	2	20
E, L,[5] G,[6] F	Dec 1928	28/ 7/28			1	1	July 1929	1		Oct 1930			July 1931	1	1						July 1933	5
E, M, S	Sept 1928	11/ 8/28			1	1	July 1929		1	Mar 1931	1	1	Oct 1932								July 1934	5
* M, L, G	L C	7/ 9/28				1	July 1920		2	Mar 1931			June 1932			1	1	1	1	1	Dec 1934	9
* E, F, G	Dec. 1929	4/ 4/29	1			2	Mar 1931		1	Mar 1932	1	1	Oct 1933										6

[1] English [2] Mathematics. [3] Science [4] French [5] Latin [6] German

* The last two obtained their Highers in the Preliminary Examination The remainder all sat for and obtained the Leaving Certificate, and are included in Table LXIV (γ).

VII

ENTRANCE BY FOREIGN QUALIFICATION

THE number of students entering by foreign qualifications was fifty-nine. More than half (31) of the students concerned passed their First Professional Examination in foreign universities, and really started their course in preparation for the Second Professional Examination

Of the remainder, twenty-four passed the First Professional Examination with 53 failures, the average number of failures being 2 21 per student. The greatest number of failures again occurred in Zoology, where there were 18 failures. Next came Chemistry with 14, Botany with 11, and Physics with 10 failures.

Four students passed the First Professional Examination at the fourth attempt, one required five attempts, and one student did not pass till the sixth attempt. All the other students passed within three attempts.

Six students passed the Second Professional Examination in foreign universities, and the remaining forty-two passed with 29 failures, an average of ·69 per student.

All who succeeded (48) in the Second Professional Examination sat the Third Professional, and 42 passed. The failures in this examination are evenly divided between the two subjects, there being 21 in each. The average number of failures is therefore ·875 per student.

In the Final Professional Examination thirty-seven out of forty-two passed by December 1934.

The numbers of the foreign students who attempted, and of those who passed the various professional examinations, are shown below:

First Professional		Second Professional		Third Professional		Final Professional	
Entered	Passed	Entered	Passed	Entered	Passed	Entered	Passed
59	51	51	48	48	42	42	37

Table LXVIII (β) shows a much more creditable performance than that of those students who entered the University by the Preliminary Examination, but not so creditable as that of those who entered by the Leaving Certificate Examination. Of the initial number 62·68 per cent graduated by December 1934. With the exception of the Second Professional, there are no sharp differences in the percentages passing each successive professional examination.

TABLE LXVIII (*a*)

Comparing foreign admission qualification and failures in professional examinations

Type of Foreign Qualification	Frequency	First Professional											Second Professional							Third Professional							Final Professional												
		Number of Failures in				Attempt at which Examination was Passed							No of Failures in		Attempt at which Exam was Passed					No of Failures in		Attempt at which Exam was Passed					Number of Failures in								Attempt at which Exam was Passed				
		Physics	Bot	Chem	Zoo	1st	2nd	3rd	4th	5th	6th	*	Phys	Anat	1st	2nd	3rd	4th	*	Path	Mat Med	1st	2nd	3rd	4th	5th	For Med	Public Health	Midwifery	C Mid and C Gyn	Surg	C Surg	Med	C Med	1st	2nd	3rd	4th	5th
American	15											15	4	2	8		3	1	1	7	4	8	2	1		1	5	4	5	5	5	5	5	5	5	3	1		1
Australian	1											1	1			1				1				1					1	1	1	1	1	1		1			
Canadian	3	1	4	3								2	1		1							1					1									1			
Chinese	1											1			1							1													1				
Egyptian	6	3	5	4	5			4			1		3	3	2			1																					
Indian	7	4		5	7	2	2	2					4	1	3	1			†1	4	5	2	2				2	3	2	2	2	2	2	2	1	1	1		
Iraqui	4					4							1		3	1				2	2	1	2				1	1	3	3	3	3	3	3	1	1	1		
Irish	2		1	1	2	1		1					2		1		1			2	2	1		1			1	1	1	1	1	1	1	1	1	1			
N. Zealand	4				1	2		1				1	1		3	1					1	3	1				2	2	2	2	2	2	2	2	2	2			
S. African	16	2	1	1	3	1	1	1		1		11	4	2	7	2	1		4	5	7	7	6	1			4	3	3	3	3	3	4	4	6	6			
Total Number entering University with Foreign Qualification																																							
Totals	159	10	11	14	18	10	3	9		1	1	31	21	8	29	6	5	2	6	21	21	24	13	4		1	16	14	17	17	17	17	18	18	17	16	3		1

* Number who passed equivalent examination in other universities

† Granted exemption, 29th January 1929

TABLE LXVIII (β)

Showing type of foreign admission qualification and percentage passing various professional examinations.

Type of Foreign Qualification	Frequency	First Professional								Second Professional						Third Professional						Final Professional					
		1st Att	2nd Att.	3rd Att.	4th Att.	5th Att	6th Att.	*	% Passed — Totals	1st Att	2nd Att	3rd Att	4th Att	*	% Passed — Totals	1st Att	2nd Att	3rd Att.	4th Att	5th Att	% Passed — Totals	1st Att	2nd Att	3rd Att	4th Att.	5th Att	% Passed — Totals
American	15							100	100	53 33		20 0	6 67	6 67	86 67	53 33	13 33	6 67		6 67	80	33 33	20 0	6 67		6 67	66 67
Australian	1							100	100		100				100			100			100		100				100
Canadian	3							66 67	66-67	33 33					33 33	33 33					33 33		33 33				33 33
Chinese	1							100	100	100					100	100					100	100					100
Egyptian	6			66 67			16 67		83 34	33 33			16 67		50												
Indian	7	28 57	28 57	28 57					85 71	42 86	14 29			14 29	71 44	28 57	28 57				57 14	14 29	14 29	14 29			42 87
Iraqui	4	100							100	75	25				100	25	50				75	25	25	25			75
Irish	2	50		50					100	50		50			100	50		50			100	50	50				100
N Zealand	4	50		25				25	100	75	25				100	75	25				100	50	50				100
S. African	16	6-25	6-25	6-25		6 25		68 75	93 75	43 75	12 5	6 25		25	87 5	43 75	37 5	6 25			87 5	37 5	37 5				75
Total Number Entering University with Foreign Qualification																											
Totals	59	16·94	5 08	15·25		1 69	1 69	52 54	93 19	49 15	10 16	8 47	3 38	10·16	81 32	40 67	22 03	6 76		1 69	71·15	28 8	27 11	5 08		1 69	62·68

* Percentage who passed equivalent examination in other universities

VIII

RELATION BETWEEN AGE AT ENTRANCE AND NUMBER OF YEARS TAKEN TO GRADUATE

Out of a total of 111 who had graduated by December 1934, as will be seen from Table LXIX, 62 students, *i.e.* 55 86 per cent., graduated within the five years usually allotted to the course. Of these 62 students, 42 were under 19 years of age when they entered the University

The mean age at entrance to the University of students completing the course successfully in five years is 18 73 years. The mean age of students completing the course successfully in 5½ years is 21 28 years. The mean age of students completing the course successfully in six years is 19 72 years The mean age of students completing the course successfully in 6½ years is 20·17 years. Since the medians up to the age of 21 are practically constant, the only general conclusion that can be drawn is that students entering after the age of 21 tend to take longer to graduate.

The number of Highers obtained at the first sitting of the Leaving Certificate and the ages of the candidates are shown below.

Age at Entry	0	1	2	3	4	5	Mean Number of Highers
16–16½				3	1		3 25
17–17½		2	4	9	4		2 8
18–18½	1	2	3	10	11	1	3 1
19–19½		2	1		2		2 4
20–20½			1				2
21–21½				1			3

Total Frequency = 58.

Of the 47 students who entered by the Leaving Certificate only, seven were over 19; those entering under 19 had obtained an average of 3 Highers at first sitting, and those over 19 an average of 2·4 Highers. Of the 11[1] who entered by the Leaving Certificate and the Preliminary Examination, two were over 19; but of the 45 who entered by the Preliminary Examination alone, as many as 17 were over 19. Of these 25 older students, four graduated in 5 years, two in 5½ years, five in 6 years, and one in 6½ years; thirteen had not graduated, nine of whom had entered by the Preliminary Examination alone. Fifteen of these 25 had Science in their entrance qualification, seven had Latin and French, and three had Modern Languages.

[1] See footnote 2 on p. 122.

TABLE LXIX

Showing ages of students on entrance to the University and the number of years taken to graduate

Age at Entrance	Number of Years taken to Graduate				Number of Years taken to Graduate			
	5 Years	5½ Years	6 Years	6½ Years	5 Years	5½ Years	6 Years	6½ Years
					%	%	%	%
15–15½								
16–16½	2		1		1 80		90	
17–17½	14	2	7	1	12 61	1 80	6 32	90
18–18½	26	2	10	3	23 42	1 80	9 02	2 70
19–19½	13	2	4	1	11 71	1 80	3 61	90
20–20½	3		4	2	2 70		3 61	1 80
21–21½	3		1		90		90	
22–22½	1	1	1	1		90	90	·90
23–23½			1				90	
24–24½								
25–25½				1				90
26–26½			1				90	
27–27½		1				90		
28–28½								
29–29½								
30–30½		1				90		
31–31½								
32–32½								
33–33½			1				90	
Totals	62	9	31	9	55 84	8 10	27 96	8·10
Mean Age	18·73	21·28	19·72	20 17				

PART IV

MEDICINE

DEDUCTIONS REGARDING INDIVIDUAL SUBJECTS

I

DATA AVAILABLE

UNLIKE most of the subjects in Arts and Science, the subjects in the medical course are not usually those taken at school. The data available for comparison between school and University results are therefore more limited, being restricted to the Leaving Certificate marks in Physical Science and the University marks in the subjects of the First Professional The marks in the subjects of the medical course itself, however, can be readily correlated with one another.

Tables LXX–LXXIII present the correlations for the Leaving Certificate and the subjects of the First Professional.

II

CORRELATIONS BETWEEN LEAVING CERTIFICATE (DEPARTMENT'S AND TEACHERS') MARKS AND MARKS IN THE SUBJECTS OF THE FIRST PROFESSIONAL EXAMINATION

TABLE LXX

Showing frequency, mean, standard deviation, standard error of mean in the Leaving Certificate examination and the First Professional examination for students entering the University with a mark on the Higher standard in Physical Science.

	Frequency	Mean Mark	Standard Deviation	Standard Error of Mean
Teachers' marks in Physical Science .	46	59·5	11·41	1·68
Department's marks in Physical Science .	46	57·33	11·35	1·67
University mark in Physics . .	46	59·39	8·71	1·28
University mark in Botany . .	46	66·67	8·69	1·28
University mark in Chemistry . .	46	57·33	12·00	1·77
University mark in Zoology . .	46	52·33	10·56	1·56

TABLE LXXI (a)

Showing marks gained in the First Professional examination in Physics, and Teachers' marks for Physical Science, for students entering the University with a mark in Physical Science on the Higher standard at the Leaving Certificate examination.

First Professional Marks in Physics

Teachers' Marks in Physical Science	35–39	40–44	45–49	50–54	55–59	60–64	65–69	70–74	75–79	80–84	85–89	Totals
80–84									1			1
75–79							1	2				3
70–74				2		2		1	1			6
65–69				3		2	2					7
60–64				3		1	2		1			7
55–59				4		2						6
50–54	1			5		1	1					8
45–49						2						2
40–44				2	1	1						4
35–39							1					1
30–34				1								1
Totals	1			20	1	11	7	3	3			46

$r = .37$

$PE_r = .086$

TABLE LXXI (β)

Showing marks gained in the First Professional examination in Botany, and Teachers' marks for Science, for students entering the University with a mark in Physical Science on the Higher standard at the Leaving Certificate examination.

First Professional Marks in Botany

Teachers' Marks in Physical Science	40–44	45–49	50–54	55–59	60–64	65–69	70–74	75–79	80–84	85–89	90–94	Totals
80–84									1			1
75–79					1		1	1				3
70–74				2			2	2				6
65–69			1		1	2		2		1		7
60–04				2	1	1	1	2				7
55–59				2	2	1	1					6
50–54			1	2		3		2				8
45–49						1	1					2
40–44				1	1	2						4
35–39						1						1
30–34		1										1
Totals		1	2	9	6	11	6	9	1	1		46

$r = 38$

$PE_r = \cdot 085$

TABLE LXXI (γ)

Showing marks gained in the First Professional examination in Chemistry, and Teachers' marks for Science, for students entering the University with a mark in Physical Science on the Higher standard at the Leaving Certificate examination

First Professional Marks in Chemistry

Teachers' Marks in Physical Science	30–34	35–39	40–44	45–49	50–54	55–59	60–64	65–69	70–74	75–79	80–84	85–89	90–94	Totals
80–84										1				1
75–79					1	1			1					3
70–74						1	2	2					1	6
65–69			1	1	1		1	3						7
60–64				1	2	2			1	1				7
55–59	1				2		1	2						6
50–54	1	1			3	1	2							8
45–49		1			1									2
40–44		1		1			1	1						4
35–39							1							1
30–34					1									1
Totals	2	3	1	3	11	5	8	8	2	2			1	46

$r = .40$

$PE_r = .05$

TABLE LXXI (δ)

Showing marks gained in the First Professional examination in Zoology, and Teachers' marks for Science, for students entering the University with a mark in Physical Science on the Higher standard at the Leaving Certificate examination

First Professional Marks in Zoology

Teachers' Marks in Physical Science	25–29	30–34	35–39	40–44	45–49	50–54	55–59	60–64	65–69	70–74	75–79	80–84	Totals
80–84												1	1
75–79						1	1		1				3
70–74						2	1	1	2				6
65–69			1	1		1	2		2				7
60–64	1		1		1	2	2						7
55–59					2	3	1						6
50–54		2	1			2	2	1					8
45–49				1		1							2
40–44			1			1	2						4
35–39							1						1
30–34				1									1
Totals	1	2	4	3	3	13	12	2	5			1	46

$r = \cdot 41$

$PE_r = \cdot 083$

TABLE LXXII (*a*)

Showing marks gained in the First Professional examination in Physics, and Department's marks for Science, for students entering the University with a mark in Physical Science on the Higher standard at the Leaving Certificate examination.

First Professional Marks in Physics

Department's Marks in Physical Science	35–39	40–44	45–49	50–54	55–59	60–64	65–69	70–74	75–79	80–84	85–89	Totals
85–89								1				1
80–84												
75–79								1	1			2
70–74						1						1
65–69						3	3	1	1			8
60–64				6		3	1		1			11
55–59				2		1	1					4
50–54	1			5		2	1					9
45–49				2								2
40–44				3	1							4
35–39				2		1	1					4
Totals	1			20	1	11	7	3	3			46

$r = 53$
$PE_r = \cdot 071$

TABLE LXXII (β)

Showing marks gained in the First Professional examination in Botany, and Department's marks for Science, for students entering the University with a mark in Physical Science, on the Higher standard at the Leaving Certificate examination.

First Professional Marks in Botany

Department's Marks in Physical Science	40–44	45–49	50–54	55–59	60–64	65–69	70–74	75–79	80–84	85–89	90–94	Totals
85–89							1					1
80–84												
75–79								1	1			2
70–74										1		1
65–69						2	3	3				8
60–64			1	1	2	3	1	3				11
55–59				1	1	2						4
50–54			1	4	1	1	1	1				9
45–49					1			1				2
40–44				2	1	1						4
35–39		1		1		2						4
Totals		1	2	9	6	11	6	9	1	1		46

$r = 56$

$PE_r = \cdot 067$

TABLE LXXII (γ)

Showing marks gained in the First Professional examination in Chemistry, and Department's marks for Science, for students entering the University with a mark in Physical Science on the Higher standard at the Leaving Certificate examination

First Professional Marks in Chemistry

Department's Marks in Physical Science	30–34	35–39	40–44	45–49	50–54	55–59	60–64	65–69	70–74	75–79	80–84	85–89	90–94	Totals
85–89					1									1
80–84														
75–79									1	1				2
70–74								1						1
65–69					2	2	2	1					1	8
60–64			1	1	2	1	1	3	1	1				11
55–59	1	1			2									4
50–54		1			3	2	1	2						9
45–49							2							2
40–44	1			1			1	1						4
35–39		1		1	1		1							4
Totals	2	3	1	3	11	5	8	8	2	2			1	46

$r = .33$
$PE_r = .087$

TABLE LXXII (δ)

Showing marks gained in the First Professional examination in Zoology, and Department's marks for Science, for students entering the University with a mark in Physical Science on the Higher standard at the Leaving Certificate examination

First Professional Marks in Zoology

Department's Marks in Physical Science	25–29	30–34	35–39	40–44	45–49	50–54	55–59	60–64	65–69	70–74	75–79	80–84	Totals
85–89						1							1
80–84													
75–79									1			1	2
70–74									1				1
65–69					1	4	1		2				8
60–64	1		1	1		1	5	1	1				11
55–59			1	1		1		1					4
50–54		2	1		1	3	2						9
45–49					1		1						2
40–44			1			2	1						4
35–39				1		1	2						4
Totals	1	2	4	3	3	13	12	2	5			1	46

$r = .33$
$PE_r = .087$

TABLE LXXIII

Summary table showing correlation coefficients (with probable errors) of Teachers' marks and Department's marks in Physical Science and University Degree marks in Physics, Botany, Chemistry, Zoology.

Leaving Certificate	University Marks in							
	Physics		Botany		Chemistry		Zoology	
	r	PE_r	r	PE_r	r	PE_r	r	PE_r
Teachers' Marks in Physical Science .	37	086	38	085	40	·084	41	·083
Department's Marks in Physical Science	53	071	·56	·067	33	087	·33	·087

The low correlation in general is due to the highly selected sample, as only candidates likely to pass are presented for the Leaving Certificate Examination. The greater predictive value of the Department's marks compared with the teachers' is doubtless due to the fact that the Department's marks have been standardised for the whole country.

The distributions of the University marks show a tendency to be affected by the 50 per cent. pass mark. There is a distinct break in the Physics and Chemistry tables at the 50 per cent. or pass level. All but one student out of the forty-six secured a mark above 50 per cent. in these subjects. The break is more conspicuous in Physics than in any of the other subjects, the distribution showing a skewness towards the lower limit of the range and being definitely discontinuous.

The low correlations in Chemistry and Zoology are due to the large number of failures in these subjects. This is reflected also in the large standard deviations in these subjects. The marks in Botany are, however, higher than those in Physics, the difference in the mean marks being 7·28. If we consider the standard errors of these two mean marks we see that this difference is clearly significant. The scatter of the marks in the two subjects is approximately the same. The range of marks in

Botany is smaller than the range in any of the other subjects. Those students who do well in the other subjects—Physics, Chemistry, and Zoology—do just as well in Botany, and those who secure a bare pass in Physics, Chemistry, and Zoology pass more or less comfortably in Botany.

The Department's marks when correlated with the University marks in Physics, Botany, Chemistry, and Zoology seem to divide these subjects into two groups, Physics and Botany in the one, and Chemistry and Zoology in the other; the correlations between Physics and Botany marks and the Department's marks being much greater than those between the Chemistry and Zoology marks and the Department's marks. This difference is not so obvious in the correlations with the teachers' marks.

Strangely enough, the strength of the relation in the two cases is exactly the reverse, Chemistry and Zoology correlating more highly with the teachers' marks in Physical Science than Physics and Botany. This may be accounted for by the fact that, as has been already stated, the Department's marks have been standardised, or it may be that the teachers and the Department, though both assessing ability in the same subject, may be emphasising different aspects.

III

INTERCORRELATIONS OF SUBJECTS IN MEDICAL COURSE

To discover whether the individual subjects in the medical curriculum have greater predictive value for success in the other subjects than the entrance examination subjects, intercorrelations of certain medical subjects are shown in Tables LXXIV–LXXXVII.

TABLE LXXIV

Showing marks gained in the First Professional examination in Physics and in the First Professional examination in Botany.

First Professional Marks in Physics

First Professional Marks in Botany	20–24	25–29	30–34	35–39	40–44	45–49	50–54	55–59	60–64	65–69	70–74	75–79	80–84	85–89	90–94	95–99	Totals
95–99																	
90–94																	
85–89									1								1
80–84								1				2					3
75–79							1	3	3	6	2	4	1				20
70–74				1		1	4	5	5	4	3	2					25
65–69					1	1	8	4	9	3							26
60–64					2	3	10	6	1		1						23
55–59		2			2	2	17	4	1	1							29
50–54			1	3	6	2	9	1		1							23
45–49			1		1		3										5
40–44				2	1	1	2										6
35–39			1	1		1											3
30–34							1										1
25–29																	
20–24																	
Totals		2	3	7	13	11	55	24	20	15	6	8	1				165

$r = \cdot 67$

$PE_r = \cdot 029$

TABLE LXXV

Showing marks gained in the First Professional examination in Physics and in the First Professional examination in Chemistry.

First Professional Marks in Physics

First Professional Marks in Chemistry	20–24	25–29	30–34	35–39	40–44	45–49	50–54	55–59	60–64	65–69	70–74	75–79	80–84	85–89	90–94	95–99	Totals
95–99																	
90–94												1					1
85–89								2									2
80–84								2	1			1					4
75–79							1	1	1			3					6
70–74						2	1		1	2	2		1				9
65–69					2	1	7	5	3								18
60–64					1	2	9	1	2	4	1						20
55–59			1				5	1	3	3	1	1					15
50–54		1	1	3	3	4	13	8	7	3	1	1					45
45–49							4		1	1							6
40–44				1			3			1	1						6
35–39					3		3	1	2								9
30–34					1	1	3	1									6
25–29		1			1	1	2										5
20–24				1			1										2
15–19							1										1
Totals		2	2	5	11	11	53	22	21	14	6	7	1				155

$r = \cdot 37$

$PE_r = \cdot 047$

TABLE LXXVI

Showing marks gained in the First Professional examination in Physics and in the First Professional examination in Zoology.

First Professional Marks in Physics

First Professional Marks in Zoology	20–24	25–29	30–34	35–39	40–44	45–49	50–54	55–59	60–64	65–69	70–74	75–79	80–84	85–89	90–94	95–99	Totals
95–99																	
90–94																	
85–89																	
80–84												1					1
75–79										2							2
70–74								1	1								2
65–69					1		2	3	4	2	3	1	1				17
60–64					1	2	5	2	3	2		2					17
55–59				1		1	11	6	3	5	1	1					29
50–54			1	1	2	2	12	5	3	3	1	1					31
45–49			1	1	1		6	4	3	1	1						18
40–44				1	3	3	7	1	1								16
35–39		1	1		3	2	6	1		1							15
30–34		1		2	2		5										10
25–29						1	1		1								3
20–24																	
15–19				1													1
Totals		2	3	7	13	11	55	23	19	16	6	6	1				162

$r = \cdot 56$

$PE_r = \cdot 036$

TABLE LXXVII

Showing marks gained in the First Professional examination in Chemistry and in the First Professional examination in Botany.

First Professional Marks in Chemistry

First Professional Marks in Botany	15–19	20–24	25–29	30–34	35–39	40–44	45–49	50–54	55–59	60–64	65–69	70–74	75–79	80–84	85–89	90–94	95–99	Totals
95–99																		
90–94																		
85–89											1							1
80–84													2					2
75–79								4	2	4	3	5	1			1		20
70–74					1	1	1	7	4	3	2	1		3	1			24
65–69				1	2	1	1	6	5	4	4			1				25
60–64				2	2	1	2	6	1	5		1	1		1			22
55–59		1	3	2	1	1	1	11	1	2	3	2	1					29
50–54		2		1	2	1	1	7		2	4			1				21
45–49			1		1			1	1	1								5
40–44			1			1		2	1		1							6
35–39			1					1										2
30–34	1																	1
25–29																		
20–24																		
Totals	1	3	6	6	9	6	6	45	15	21	18	9	5	5	2	1		158

$r = \cdot 44$

$PE_r = \cdot 043$

TABLE LXXVIII

Showing marks gained in the First Professional examination in Chemistry and in the First Professional examination in Zoology.

First Professional Marks in Chemistry

First Professional Marks in Zoology	15–19	20–24	25–29	30–34	35–39	40–44	45–49	50–54	55–59	60–64	65–69	70–74	75–79	80–84	85–89	90–94	95–99	Totals
95–99																		
90–94																		
85–89																		
80–84													1					1
75–79										1								1
70–74												1			1			2
65–69					1			1	3	1	5	4		1		1		17
60–64				1	1			5	3	5			1	1				17
55–59				1	1	1	1	7	4	4	4	2	2	1	1			29
50–54			1	2	2	2	1	11	2	4	5	1		1				32
45–49		2	2		1	1	1	2	2	2	2			1				16
40–44				1		1		9		2	1	1						15
35–39			2	1	1		2	5		2	1							14
30–34	1	1	1		2	1	1	1	1									9
25–29								3										3
20–24																		
Totals	1	3	6	6	9	6	6	44	15	21	18	9	4	5	2	1		156

$r = \cdot 45$

$PE_r = \cdot 043$

TABLE LXXIX

Showing marks gained in the First Professional examination in Zoology and in the First Professional examination in Botany.

First Professional Marks in Zoology

First Professional Marks in Botany	15–19	20–24	25–29	30–34	35–39	40–44	45–49	50–54	55–59	60–64	65–69	70–74	75–79	80–84	85–89	90–94	95–99	Totals
95–99																		
90–94																		
85–89											1							1
80–84											1			1				2
75–79							1	1	4	4	9		1					20
70–74					1		2	7	7	5	1	2						25
65–69					2	4	3	4	6	3	3							25
60–64			1		2	3	4	3	5	3	3	1						25
55–59			1	3	6	2	5	6	6	1								30
50–54			1	5	1	7	3	4	2									23
45–49					1	1	1	1		1								5
40–44	1					1		6										8
35–39				1	2													3
30–34				1			1											2
25–29																		
20–24																		
Totals	1		3	10	15	18	20	32	30	17	18	3	1	1				169

$r = \cdot 58$

$PE_r = 034$

TABLE LXXX

Showing marks gained in the Second Professional examination in Anatomy and in the Second Professional examination in Physiology

Second Professional Marks in Anatomy

Second Professional Marks in Physiology	20–24	25–29	30–34	35–39	40–44	45–49	50–54	55–59	60–64	65–69	70–74	75–79	80–84	85–89	90–94	95–99	Totals
95–99																	
90–94																	
85–89																	
80–84																	
75–79											1		2				3
70–74									2	1		2		2			7
65–69						1	2		3	3	5	3					17
60–64				1			4	4	6	3	4	3					25
55–59					3	2	1	6	6	4	3	3					28
50–54		1			6	2	9	7	6	5	2	1					39
45–49					1	2	6	5	4		1						19
40–44		1	3	1	1	1	3	2	3								15
35–39		1		2	3	1	1		1	1							10
30–34			1		1	1	1										4
25–29									1								1
20–24																	
Totals		3	4	4	15	10	27	24	32	17	16	12	2	2			168

$r = \cdot 58$

$PE_r = \cdot 038$

TABLE LXXXI

Showing marks gained in the Third Professional examination in Pathology and in the Third Professional examination in Materia Medica.

Third Professional Marks in Pathology

Third Professional Marks in Materia Medica	20–24	25–29	30–34	35–39	40–44	45–49	50–54	55–59	60–64	65–69	70–74	75–79	80–84	85–89	90–94	95–99	Totals
95–99																	
90–94																	
85–89																	
80–84																	
75–79										1							1
70–74							2		2	1							5
65–69						1	2	4	1	1	1	1					11
60–64						1	4	5	11	3							24
55–59					1	2	7	10	9	1	2						32
50–54					2	4	18	8	9	1		1					43
45–49					3	20	7			2							32
40–44					1	5	2		1								9
35–39					2	1	1										4
30–34					1		1	1									3
25–29					1	1											2
20–24																	
15–19				1		1											2
Totals				1	11	36	44	28	33	10	3	2					168

$r = \cdot 56$

$PE_r = \cdot 036$

TABLE LXXXII

Showing marks gained in the Final Professional examination in Surgery and in the Final Professional examination in Medicine.

Final Professional Marks in Surgery

Final Professional Marks in Medicine	20–24	25–29	30–34	35–39	40–44	45–49	50–54	55–59	60–64	65–69	70–74	75–79	80–84	85–89	90–94	95–99	Totals
95–99																	
90–94																	
85–89																	
80–84												1					1
75–79											1						1
70–74									1	3	1						5
65–69							1		3	3	5	1					13
60–64						1	2	12	9	2	4						30
55–59						1	3	11	12	8	2	1					38
50–54					1	2	7	9	3	2	1						25
45–49					2	3	6	4	1								16
40–44						2		2									4
35–39						1	1	1									3
30–34							1										1
25–29																	
20–24																	
Totals					3	10	21	39	29	18	14	3					137

$r = \cdot 62$

$PE_r = \cdot 034$

TABLE LXXXIII

Showing marks gained in the First Professional examination in Zoology and in the Second Professional examination in Physiology

First Professional Marks in Zoology

Second Professional Marks in Physiology	20–24	25–29	30–34	35–39	40–44	45–49	50–54	55–59	60–64	65–69	70–74	75–79	80–84	85–89	90–94	95–99	Totals
95–99																	
90–94																	
85–89																	
80–84																	
75–79										3							3
70–74						1		3		1			1				6
65–69		1			2		1	4	2	3	1	1					15
60–64		1	1	1	1	3	6	3	3	3	1						23
55–59		1			2	2	8	3	5	4							25
50–54			2	5	3	4	4	9	3	1							31
45–49				1	1	2	3	4	2								13
40–44			1	2	2	4	3	2	1								15
35–39				1	2		2	1									6
30–34					1		2										3
25–29									1								1
20–24																	
Totals		3	4	10	14	16	29	29	17	15	2	1	1				141

$r = 33$

$PE_r = \cdot 051$

TABLE LXXXIV

Showing marks gained in the First Professional examination in Zoology and in the Second Professional examination in Anatomy.

First Professional Marks in Zoology

Second Professional Marks in Anatomy	20–24	25–29	30–34	35–39	40–44	45–49	50–54	55–59	60–64	65–69	70–74	75–79	80–84	85–89	90–94	95–99	Totals
95–99																	
90–94																	
85–89								1									1
80–84										2							2
75–79							1	4	2	2		1	1				11
70–74						1	1	3	5	5	1						16
65–69							2	7	4		1						14
60–64		1		1	4	5	6	4	1	2							24
55–59			3	2	1	1	5	4	1	2							19
50–54		1		1	4	6	3	4	3								22
45–49					2	1	4		1								8
40–44		1		3	2	1	3			1							11
35–39				2		1	1										4
30–34			1		1	1	1										4
25–29				1			2										3
20–24						1											1
Totals		3	4	10	14	18	29	27	17	14	2	1	1				140

$r = 53$

$PE_r = \cdot 041$

TABLE LXXXV

Showing marks gained in the First Professional examination in Zoology and in the Third Professional examination in Pathology.

First Professional Marks in Zoology

Third Professional Marks in Pathology	20–24	25–29	30–34	35–39	40–44	45–49	50–54	55–59	60–64	65–69	70–74	75–79	80–84	85–89	90–94	95–99	Totals
95–99																	
90–94																	
85–89																	
80–84																	
75–79								1	1								2
70–74						1				1							2
65–69						1	1	3	2				1				8
60–64				1	1	2	3	7	4	5	1	1					25
55–59				1		5	4	6	3	4	1						24
50–54		1	1	3	8	4	8	5	2	2							34
45–49		1		3	2	3	9	4	5	2							29
40–44			2	1	1	1		2									7
35–39																	
30–34																	
25–29																	
20–24																	
Totals		2	3	9	12	17	25	28	17	14	2	1	1				131

$r = \cdot 39$

$PE_r = \cdot 050$

TABLE LXXXVI

Showing marks gained in the First Professional examination in Zoology and in the Final Professional examination in Surgery.

First Professional Marks in Zoology

Final Professional Marks in Surgery	20–24	25–29	30–34	35–39	40–44	45–49	50–54	55–59	60–64	65–69	70–74	75–79	80–84	85–89	90–94	95–99	Totals
95–99																	
90–94																	
85–89																	
80–84																	
75–79								1				1	1				3
70–74							1	6	1	5							13
65–69						1	3	2	3	3	2						14
60–64		1			1		4	7	6	2							21
55–59				2	5	4	7	7	3	2							30
50–54			1	3		3	2	2	3								14
45–49					2	1	2	3									8
40–44										1							1
35–39																	
30–34																	
25–29																	
20–24																	
Totals		1	1	5	8	9	19	28	16	13	2	1	1				104

$r = \cdot 47$

$PE_r = \cdot 052$

TABLE LXXXVII

Summary table showing correlation coefficients (with probable errors) of marks in the various subjects of the medical curriculum

Marks correlated	n	r	PE_r
Physics and Botany	165	·67	·029
,, and Chemistry	155	·37	·047
,, and Zoology	162	·56	·036
Chemistry and Botany	158	·44	·043
,, and Zoology	156	·45	·043
Zoology and Botany	169	·58	·034
Anatomy and Physiology	168	·58	·038
Pathology and Materia Medica	168	·56	·036
Surgery and Medicine	137	·62	·034
Zoology and Physiology	141	·33	·051
,, and Anatomy	140	·53	·041
,, and Pathology	131	·39	·050
,, and Surgery	104	·47	·052

The difference in the frequencies of the various tables is due to the fact that not all the cases yielded relevant data for all pairs of subjects. For example, a card which gave marks for both Physics and Chemistry might not give marks for both Physics and Zoology, because the student might still have to sit one of the examinations in question.

A glance at Table LXXXVII will show that the highest correlations are obtained from those pairs of subjects which normally are studied in the same year. Thus the highest correlation is between Physics and Botany ($r = .67$); then come Surgery and Medicine ($r = .62$), Zoology and Botany ($r = .56$), and Pathology and Materia Medica ($r = .56$). It is interesting to note that Chemistry does not appear in any of these pairs, and that the lowest correlation in which Chemistry is involved is that between Chemistry and Physics, the one which might have been expected to rank highest. Between the sixth and seventh correlations on the list, in order of magnitude of the coefficients, there is a distinct break.

Leaving those involving Chemistry for the moment out of consideration, we find that the remaining four correlations below the break (the last four on Table LXXXVII) embrace subjects which are taken in different years of the course. These facts naturally suggest either a difference in the method of marking, or a distinct difference in the nature of the subjects concerned. The very low correlations for Chemistry may be due to the fact that for that subject the range is much greater than for any of the others, and consequently the standard deviation of the marks is considerably increased.

In Tables LXXXI and LXXXV, showing Pathology marks with Materia Medica and with Zoology, the frequencies stop suddenly at the 40–44 interval. This has undoubtedly lowered the correlations.

PART V

SUMMARY OF CONCLUSIONS

THE object of this inquiry was to investigate the prognostic or predictive value of the qualifications on the strength of which a student enters the University, *i.e.* the extent to which success in an entrance examination is an augury of success in University studies.

At the secondary school-leaving stage two measures were available: (A) teachers' marks in individual subjects based on the pupils' class work together with the general estimate of the Head Teacher, and (B) the marks based on the Leaving Certificate examination conducted by external examiners under the supervision of the Scottish Education Department. There were also two sets of data from which it was possible to estimate University success in Arts and Pure Science: (C) the students' marks in the class examinations set throughout the session by the professors themselves, and (D) the marks in the degree examinations set conjointly by the professors and external examiners in the various subjects at the end of each session for the ordinary degree, or at the end of the four or five years' course for the Honours degree. In Medicine no class marks, but degree marks only, were considered.

ARTS AND PURE SCIENCE

These marks were collected and statistically analysed for a group of students who had entered on degree courses in Arts or Pure Science at one of the Scottish Universities in the autumn of 1928. This group contained 231 men and 241 women, a total of 472. In this group 266 were admitted solely on the results of the Leaving Certificate Examination and 84 others on a combination of this examination with another. The conclusions reached in this section of the Report are based on these data. (See pp. 15–16.)

On the one hand, there are the Head Teacher's general estimate, the teachers' estimates in special subjects, the collective value of the Leaving Certificate, the number and grades of passes it contains, and the marks of the Department's revisers in special subjects; on the other, the class of Honours a student obtained if he took an Honours degree at the University, or, if he did not, the number of years he required to graduate, the number of failures, if any, in degree examinations, and the marks he obtained in class and degree examinations. (See p. 19.)

I. On the whole, Head Teachers' estimates are higher for those students who obtained Honours than for those who did not; and among Honours graduates slightly higher for the Firsts than for the Seconds, and for the Seconds than for the Thirds. There is not much difference in their estimates of those who took Ordinary degrees and of those whose degrees were incomplete at Easter 1933, while their estimates of those who discontinued their courses are, on the whole, similar to their estimates of the Honours rather than of the Ordinary graduates. While some students discontinued their courses because of repeated failure in examinations, many others had excellent University records. (See pp. 20 *et seq*.)

II. In a group of 43 students whose Composite Marks [1] in the Leaving Certificate Examination were 70 or over, 28 took Honours of the First or Second Class, 10 took Ordinary Degrees, 5 discontinued their courses, and there were none who did not complete their degrees; whereas of the 62 students with Composite Marks below 50, 2 obtained First or Second Class Honours, 39 took Ordinary degrees, 11 failed to complete, 6 discontinued, and 4 took no examinations. The mean Composite Mark of Honours graduates is higher than that of Ordinary graduates, which in turn is higher than that of those who had not completed their degrees, but slightly lower than that of those who discontinued. As between Men and Women the First Class Honours men have a lower mean Composite Mark than the First Class Honours women, while among Third Class Honours graduates the reverse holds. There is no significant difference between men and women in other categories. (See pp. 23–25.)

III. The average number of Higher Grade passes in the Leaving Certificate examination obtained at the first sitting was highest among those who afterwards graduated with Honours;

[1] For method of estimating composite mark see p. 23.

there was no difference between those who had obtained an Ordinary degree and those who had not yet graduated in 1933. (See pp. 26–28.)

IV. The mean number of failures in University Degree Examinations increases as the number of Higher Grade Leaving Certificates decreases. (See p. 28 and Table VII (γ), p. 29.)

V. Although a higher proportion of Honours graduates than of Ordinary graduates remains at school an additional year after completing their Leaving Certificate, the data afford no conclusive evidence as to the value of the additional year at school. The Honours graduates passed their Leaving Certificate examination at an earlier age than the Ordinary graduates. (See pp. 33–34.)

VI. The average age at entrance of the students who graduated with Honours was 18 years 8 months, which is the same as that of those who took a Pass degree in three years and only about a month less than that of those who took a Pass degree in four years. The dispersions of these three groups differ only slightly. (See pp. 35–36.)

VII. Of the 472 students, 17 reported themselves as employed during their University course, but only in one instance was it found that the duration of the course was affected by such employment. (See p. 37.)

VIII. As regards marks in individual subjects, the correlations between the teachers' estimates and the Leaving Certificate Examination marks vary from ·37 for Latin to ·69 for Science, with an average of ·55. (See p. 45.) Correlations between class and degree marks at the University vary from ·51 for Mathematics to ·85 for German, with an average of ·69. (See p. 55.) Thus there is slightly closer agreement between the two University estimates than between the two school estimates which are given by different authorities.

There is no significant difference between the prognostic value of teachers' marks and that of the Department's marks for success either in the University class examinations or in the degree examinations. A striking fact is the smallness of some of the correlation coefficients in Mathematics, English, and Latin (the coefficient in degree Mathematics was influenced by the fact that students who have reached a good standard in class examinations are exempted from the degree examination). All

the correlations have indeed been affected by the fact that the data refer only to the pupils successful at the Leaving Certificate examination. In considering the value of the teacher's estimate one has to bear in mind that it can hardly fail to be influenced by his experience of the objective standard of the Leaving Certificate examination. (See p. 84.)

IX. When the Honours group are considered alone and their Leaving Certificate marks in English, Mathematics, Latin, French, and Science compared, the following interesting conclusions emerge:[1] The mathematicians appear to marked advantage; they have the highest Leaving Certificate average not only in their own subject and in Science, but in Classics also. Those who graduated with Honours in Modern Languages naturally head the list in French; they stand second in Mathematics and third in Latin. The graduates with Honours in English appear to less advantage. It is not surprising, perhaps, that the English group have the lowest Leaving Certificate average in Mathematics; but it is surprising that they have also the lowest average in French, except for the B.Sc. students. The Classical Honours graduates are surpassed in Latin by the mathematicians. Are we to infer that a good many able boys—the case seems to be somewhat different with girls—take Latin at school for traditional reasons but specialise in other subjects when they go to college? Other facts already noted seem to point in that direction. (See pp. 108–109.)

X. The correlations between Leaving Certificate marks in English, Mathematics, Latin, and French, and class or degree marks in the purely University subject of Philosophy are all low with the possible exception of English (·38). (See pp. 110–115.)

XI. Natural Philosophy (Physics) University marks give a correlation of ·47 with Higher Science Leaving Certificate marks, ·38 with English, but only ·27 with Mathematics. (See pp. 116–118.)

Medicine

The number of students who matriculated in the Faculty of Medicine in the autumn of 1928 at the Scottish University and whose records were placed at the disposal of the Committee was 245 (216 men and 29 women). Of these, 31 sat no class or professional examination; the 38 who entered by English or Welsh certificates, the 7 who were exempt under Section VIII,[2]

[1] See Table LII (*a*) and (*β*).

[2] See footnote 4 on p. 122.

the 6 who had another degree from a British University, and the one who had taken an earlier form of Leaving Certificate, were not available for this statistical study of the entrance examinations. The conclusions for the whole of this section of the investigation are based on the records of the remaining 162 students, grouped as follows:—

(*a*) 58 entering by Leaving Certificate (pp. 125–137);
(*b*) 45 entering by University Preliminary Examination (pp. 136–141);
(*c*) 59 entering by foreign qualifications (pp. 146–149).

The percentages of the students entering in these three ways who had completed the full medical course and obtained a degree by 1934 are as follows:—

	1st Attempt	By 2nd Attempt	All, including 3rd, and later, Attempts
	Per cent.	Per cent	Per cent.
(*a*) Leaving Certificate .	69	76	78
(*b*) University Preliminary Examination .	38	49	49
(*c*) Foreign qualifications.	29	56	63

Thus the Leaving Certificate entrants, are most likely to succeed ultimately, and the foreign students, although failing oftener at the first attempt than the Preliminary Examination entrants, ultimately make a better showing, but are still markedly inferior to the Leaving Certificate entrants. The percentage (78 per cent.) of Leaving Certificate entrants passing the Final Examination is higher than that of the Preliminary Examination entrants (73 per cent.) or the foreign students (71 per cent.) passing the Third Professional.[1] (See pp. 132, 140, and 149.)

XII. For the Leaving Certificate entrants (58) we find that the Head Teacher's opinion of the pupil's chance of success at the Leaving Certificate examination is apparently of slight prognostic value for success in the University medical course, as measured by date of graduation. The Leaving Certificate examination itself may be of somewhat greater value. (See pp. 126–129.)

XIII. Subdividing these Leaving Certificate entrants according to their school course into Classical, Latin-French, and Science

[1] *Cf.* p. 17 for Arts and Science students.

groups, we find that, while only 8 out of 13 (62 per cent.) Latin-French students finally pass, as many as 34 out of 42 (81 per cent.) of the Science group pass the Final, but there is no significant difference in the proportion of failures in the examinations leading up to the Final. The number in the Classical group is too small for adequate comparison. (See p. 132.)

XIV. When we consider the numbers of failures in individual subjects of the medical curriculum for Leaving Certificate entrants, we find that in the First Professional Zoology definitely causes most difficulty (p. 135), and in the Second Professional Physiology is more exacting than Anatomy.

XV. Those students who remained at school for an additional year seemed to graduate earlier than those who went direct to the University, but there is no significant difference in the percentage of these two groups who had finally passed by December 1934. (See p. 136.)

XVI. In reviewing the results obtained by the Preliminary Examination entrants (45), we find that the Preliminary Examination is of much less prognostic value for medical graduation than the Leaving Certificate, whether estimated by date of graduation, percentage of final success in obtaining a degree, or proportion of failures per student in individual examinations. (See pp. 138–143.)

XVII. On comparing groups according to school course, we find 7 out of 14 (50 per cent.) of the Latin-French students passing the Final, while 13 out of 23 (56·5 per cent.) of the Science students pass, which is not so marked a difference as with Leaving Certificate entrants. When we compare the tables showing the average number of failures per student (pp. 135 and 143) we find distinctly higher figures for the Preliminary Examination entrants.

XVIII. In the First Professional Zoology is again responsible for the most failures, but in the Second Professional Anatomy proves more rigorous than Physiology. (See p. 143.)

XIX. With regard to the 59 students entering by foreign qualifications, we find that, taking final graduation as the standard, these students seem to occupy a position intermediate between the Leaving Certificate and the Preliminary Examination entrants, although more of them require more than one attempt to pass the Final. Since many of them take their First and Second Professionals before entering a Scottish Univer-

sity, we cannot calculate their average failures in individual examinations on the same basis as for the other groups. (See pp. 146–149.)

XX. Students entering over 21 years of age tend to take longer than younger students to complete the medical course successfully. (See p. 150.)

XXI. The correlation of the Department's marks in Physical Science in the Leaving Certificate examination for 46 students, and the University marks in Physics, Botany, Chemistry, and Zoology, are fairly low throughout, the highest being the correlations involving Physics (·53) and Botany (·56). (See p. 163.)

XXII. With the possible exception of Chemistry, the intercorrelations of certain medical subjects taken at the same time are fairly high. This suggests that a test in medical subjects or subjects of a similar nature might prove of better prognostic value than the present examination in subjects representing merely a general education. (See p. 179)

As several of the correlation coefficients in this investigation are in the neighbourhood of 30, it should be observed that when $r = \cdot 30$, the corresponding coefficient of alienation, k ($k = \sqrt{(1 - r^2)}$), is ·95. The coefficient of alienation measures the error of a prediction based on the correlation. Thus, if the correlation between Chemistry and Physics is ·30, and we infer a student's mark in Physics from a knowledge of his mark in Chemistry, the error of our estimate is ·95 of the error that would have been made had we ignored the correlation altogether and merely assigned him the average mark of the group. The estimate is better than the average mark as a probable value, but its error is only 5 per cent. less.

The groups of students in question are also highly selected, the whole of the possible students, for example, who failed to pass the entrance examination being necessarily left out. The various correlation coefficients have therefore a restricted application.

As none of the entrance examinations considered in this investigation is devised to select students who are likely to succeed in special University courses, but merely to guarantee a certain standard of general education, the feasibility of applying some further specific prognostic test or tests should be considered.

Throughout it should be remembered that the data were derived from the entrants to one Scottish University in one session only, and, in interpreting the results, that no information was available regarding the success that pupils who did not enter for or who failed in the Leaving Certificate examination might have had at the University had they been admitted.

APPENDIX II

After-University Employment of Arts and Pure Science Students

TABLE A

Showing types of employment obtained as at Easter, 1934, by students with Honours or Ordinary M A. or B.Sc. degree.

Men

Degree	Teaching	Law	Inland Revenue	Customs and Excise	Banking and Accountancy	Ministry of Labour	Journalism	Secretarial Work	Church	Chemistry	Salesmanship	League of Nations
Hons M.A	5	1	1	1		1	1	1		1		1
Ord M A.	22	4[1]	1		2		1		1			
Ord M A, incomplete					2	1					1	
Hons B.Sc.	5									1		
Ord B.Sc.												
Totals .	32	5	2	1	4	2	2	1	1	2	1	1

[1] Law apprentices.

Besides the above, two students with incomplete Ordinary M.A. degrees are in regular employment, one as a furniture dealer and one as a hotel porter, and one student with a complete M A. degree is getting casual labour on farms.

Women

Degree	Teaching	Clerking	Typing	Secretarial Work	Governess	Civil Service	Ministry of Health	Board of Fisheries	Costing	Social Work	Married
Hons. M.A.	5	1		1							
Ord. M.A.	48		1	7					1	4	1
Ord. M.A., incomplete	3	1	1	2	1	1	1				
Hons. B.Sc.								1			
Ord. B.Sc.	1										
Totals .	57	2	2	10	1	1	1	1	1	4	1

TABLE B

Showing numbers of students employed, unemployed, or completing post-graduate study or training as at Easter, 1934.

Type of Degree	Employed		Unemployed		Completing Post-Graduate Study or Training
	Teachers	Others	Trained as Teachers	Others	
Men and Women					
Hons. M A . .	10	9	37	2	34
Ord. M A .	68	19	47	5	36
Ord. M.A., incomplete	3	13	2	1	4
Hons B.Sc .	4	3	2	1	10
Ord. B.Sc .	1	1	3	..	1
Totals .	86	45	91	9	85
Men					
Hons. M.A. . .	5	7	22	1	23
Ord. M.A. . .	21	5	8	1	20
Ord. M.A., incomplete		6		1	2
Hons B.Sc .	4	2	2	1	8
Ord. B.Sc .	.	..	2		1
Totals . .	30	20	34	4	54
Women					
Hons M.A. . .	5	2	15	1	11
Ord. M.A. . .	47	14	39	4	16
Ord. M.A., incomplete	3	7	2	.	2
Hons. B.Sc. . .	..	1	..	..	2
Ord. B.Sc. . .	1	1	1	..	..
Totals . .	56	25	57	5	31

This table contains information concerning 316 students.
The remaining 156 are formed of two groups:

(1) Those who are still attending classes at the University.
(2) Those who have now left the University and about whom no information has been obtained

APPENDIX III

STUDENTS IN ARTS AND PURE SCIENCE WHO DISCONTINUED UNIVERSITY COURSE AND WHO GAVE REASONS FOR DOING SO

	Men	Women
Entrance qualifications not completed	.	1
Failed in degree examinations	4	..
Transferred to new course—University or other	4	5
Left to take situation	3	6
Entered Divinity Faculty as non-graduates	3	..
Ill-health	..	4
Home circumstances	1	3

These figures represent only about one-third of the total number who discontinued, the others not having returned the questionnaire on After-careers.

APPENDIX IV

Note on Statistical Terms used in this Report

The *mean* of a set of values is found, as every schoolboy knows, by dividing their sum by their number. It is a measure of the central tendency of the group. For the benefit of the lay reader who is unfamiliar with statistical methods, it may be advisable to point out that the *median* is another measure of central tendency; it is the middle value when all the values are arranged in descending order of magnitude; it is quickly found, it is useful where (as in Table V) the values are not expressed numerically, and it usually has nearly the same value as the mean.

Two sets of marks may differ in another respect, namely, in *scatter* (called also *dispersion*); in one set the individual marks may cluster closely round the mean, whereas in the other they may be widely scattered; for example, two sets of marks may have actually the same mean, 60, but in one set they may range from 55 to 65, while in the other they may run from 40 to 80. The most commonly used measure of this scatter is the standard deviation (σ); it is the square root of the mean of the squares of the differences between the individual values and their mean. If n be the number of values, and x be the difference between their mean and one of them, then

$$\sigma^2 = \frac{\Sigma(x^2)}{n}$$

In Table XXXIX the mean mark of the men who took Honours in subjects other than Mathematics was 64·28, which is nearly the same as 63·94, the mean mark of the women; but the standard deviation of the women was greater, showing that there was greater variability in their marks.

The *probable error* (P.E.) is another measure of dispersion. It is about two-thirds (more exactly ·6745) of the standard deviation. In a *normal* distribution half of the values lie between the limits (Mean + P.E.) and (Mean − P.E.), while ·68 of them lie between the limits (Mean + σ) and (Mean − σ).

For a full explanation of the meaning and use of *the standard*

error of a mean (σ_m) a text-book of statistics should be consulted. Suppose we know the Leaving Certificate marks in Mathematics of all candidates, and know that their mean is M and their standard deviation σ. If samples of (say) 100 be taken at random (each being replaced before the next is taken), then their means, m_1, m_2, m_3, etc., will not all be exactly equal to M, the mean of the whole; but they will not differ very much from it. If the differences $M-m_1$, $M-m_2$, $M-m_3$, etc., be plotted, they will in general give a curve with a standard deviation of $\frac{\sigma}{\sqrt{n}}$, where σ is the standard deviation of the whole. This value (which has been written σ_m in our tables) is the standard error of the means. Since in practice we do not know the standard deviation of the whole, but only that of a sample, it is customary to take the standard deviation of the sample as the best estimate of that of the whole.

The standard error of the mean enables us to estimate the significance of *the difference between two means*. If two samples be taken of marks gained in a subject by the *same* students, their means will generally be only slightly different; if the samples be the marks of *different* students, the difference between their means may be great or small. The question arises: How great must the difference be before we can say with fair certainty that it indicates a real difference and that it is probably not the sort of difference that arises in random sampling? For practical purposes it can be taken that a difference is significant if it be twice its standard error, for the odds are 20 to 1 against getting it by mere chance in samples of a homogeneous population; if it be two and a half times its standard error the odds are 100 to 1. Now the standard error of a difference between two means is

$$\sqrt{\sigma_{m_1}^2 + \sigma_{m_2}^2}$$

where σ_{m_1} and σ_{m_2} are the standard errors of the means in question.

In Table XXXIX the difference between the means of the two groups of Honours students (64·18 and 72·16) is 7·98, and its standard error is $\sqrt{1{\cdot}01^2 + 3{\cdot}82^2}$, which is 3·95. 7·98 is about twice 3·95, hence the difference between the means of the two Honours groups is probably not an accidental one—in fact the odds against its being a chance difference are 20 to 1.

A *correlation coefficient* is a measure of relationship between two sets of values. If, when Leaving Certificate marks and teachers' estimates are tabulated side by side, it is found that there is perfect correspondence between them so that when they are plotted on squared paper the points representing them lie along a straight line, then the correlation coefficient is unity; when there is no relationship between the marks the correlation is zero. Between perfect and zero correlation there are all degrees which are represented by fractions between 0 and 1.

The coefficient (r) given in the tables has been found by the "product-moment" formula

$$r = \frac{\Sigma(xy)}{n\sigma_x\sigma_y}$$

where x and y are marks, *e.g.* Leaving Certificate mark and degree mark, measured from their means, and σ_x is the standard deviation of one set of marks and σ_y is that of the other.

The *probable error* of r which is given in the tables has been found by the formula

$$\mathrm{PE}_r = \frac{.6745(1 - r^2)}{\sqrt{n}}$$

To find whether a correlation coefficient is significantly different from zero one must take as the probable error $\frac{.6745}{\sqrt{n}}$ (or more exactly $\frac{.6745}{\sqrt{n-1}}$) where n is the frequency. Where a coefficient is more than three times this value, it may be regarded as significant, the odds being 20 to 1.

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